INTERMOUNTAIN POWER SERVICE CORPORATION

CONTRACT 03-45590

and

SPECIFICATIONS

for

ELECTRICAL CONSTRUCTION WORK

CONTRACT ISSUED TO:

GSL ELECTRIC
8540 SOUTH SANDY PARKWAY
SANDY, UT 84070

CONTRACT ADMINISTRATOR: GERALD HINTZE

BUYER: JOHN LARSEN

850 West Brush Wellman Road, Delta, Utah 84624 / Telephone (435) 864-4414 / FAX. (435) 864-6670 / Fed I.D. #87-0388573

Contract No. 03-45590

CONTRACT AGREEMENT

THIS CONTRACT AGREEMENT, entered into this 3rd day of March, 2003, between the **INTERMOUNTAIN POWER SERVICE CORPORATION** (IPSC), a nonprofit organization under contract to the Intermountain Power Agency (IPA), a political subdivision of the state of Utah, organized and existing under the Interlocal Co-Operation Act, Title 11, Chapter 13, Utah Code Annotated 1953, as amended, and **GSL Electric**, a corporation, with its principal office in Sandy, Utah, hereinafter called the "Contractor",

WHEREAS, IPSC has prepared specifications and other Contract Documents for **Electrical Construction Work** as detailed in the Contract Documents (the "Work"), and has requested proposals from bidders to perform the Work;

WHEREAS, Contractor has submitted to IPSC a Proposal in accordance with the terms of this Contract Agreement; and

WHEREAS, IPSC has determined and declared Contractor to be the lowest and best, regular responsible bidder for the said Work, subject to execution of this Contract Agreement;

AGREEMENTS: In consideration of the compensation to be paid to Contractor, and of the mutual terms and conditions contained herein, IPSC for itself and its successors, and the Contractor for itself and its permitted successors and assigns, hereby agree as follows:

ARTICLE I: Contractor shall perform in accordance with the provisions of this Contract Agreement, including the "Contract Documents" identified in Article III hereof.

ARTICLE II: Contractor will be paid for its performance under this Contract Agreement in accordance with the provisions of the Contract Documents, including those provisions in the Article entitled "Limitation of Liability; Responsible Party" in Part E, Division E1, General Conditions.

ARTICLE III: The term "Contract Documents" means and includes all of the following:

PART	DIV	TITLE
A	A1	Notice Inviting Proposals
B	B1	Instructions to Bidder
C		Bidding Documents
	C1	Bidder's Bond
	C1	Revised Proposal, dated February 11, 2003
	C1	Labor, Material, and Performance Bond
	C2	Proposal Schedule for Cooling Tower Electrical
	C3	Wage Breakdown Form for Time and Material Work
	C4	Fixed Percentage Markups for Time and Material Work
	C5	Equipment Rental Rates for Time and Material Work
D	D1	Contract Documents Description
E	E1	General Conditions
	E2	Additional General Conditions
F		Detailed Specifications
	F1	Special Conditions
	F2	Detailed Requirements for Helper Cooling Tower
	F3	Detailed Requirements for Time and Material Work

Attachments

1. IPSC Safety Documents

2. Technical Reference Specifications

3. PAI #101 - Spill Prevention Control and Countermeasure Plan
   PAI #106 - Hazardous Materials and Waste Management
   PAI #144 - Minimization and Control of Hazardous Materials and Wastes

4. Drawings as referred to in Part D, Division D1

5. Weyher Construction Schedule

6. GSL Meeting Minutes

The foregoing Contract Documents, and the documents identified in Part D "Contract Documents Description," are an integral part of this Contract Agreement and are hereby incorporated as part of this Contract Agreement as if fully restated herein. The above listed Contract Documents shall prevail over other information submitted with Contractor's Proposal.

ARTICLE IV: This Contract Agreement, including the Contract Documents, constitutes the entire agreement of the parties hereto with respect to the Work and other subjects addressed herein, and supersedes all prior oral communications or written documents.

WHEREFORE, IPSC and Contractor execute this Contract Agreement as of the date stated in the first introductory paragraph.

INTERMOUNTAIN POWER SERVICE CORPORATION:
850 West Brush Wellman Road
Delta, UT 84624-9546

By George W Cross
George W. Cross
President and Chief Operations Officer

3/3/03
Date

GSL Electric
8540 South Sandy Parkway
Sandy, UT 84070

By: Lonnie Cropell

2-25-03
Date

Title: CFO

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SPECIFICATIONS

PART A - DIVISION A1

NOTICE INVITING PROPOSALS

The Intermountain Power Service Corporation (IPSC) invites sealed bids for furnishing and delivering **Electrical Construction Work** in accordance with **Specifications 45590** available in the Purchasing Section, Intermountain Power Service Corporation, 850 West Brush Wellman Road, Delta, UT 84624-9546.

Proposals shall be submitted on IPSC's bidding forms. All Proposals shall be filed with the Buyer at the above address at or before 2:00 p.m. on **January 24, 2003**.

Each Proposal shall be accompanied by a certified or cashier's check payable to Intermountain Power Agency (IPA), or a surety bond payable to IPA, IPSC, and the Los Angeles Department of Water and Power (LADWP) in the amount of One Thousand Dollars ($1,000) as a guarantee that the bidder shall execute the proposed Contract Agreement if awarded.

Proposals shall be subject to acceptance within, and irrevocable for, a period of ninety (90) calendar days after date of bid opening.

IPSC reserves the right to reject any and all Proposals.

The successful bidder shall furnish a Performance Bond in the amount of Fifty Thousand Dollars ($50,000), and shall keep the Performance Bond in place at all times thereafter until all obligations under the Contract have been discharged.

In the performance of any Contract awarded, the bidder shall not discriminate in employment practices against any employee or applicant for employment because of race, religion, national origin, ancestry, sex, age, or physical disability.

Dated: 1/16/2003

John R. Larsen, Buyer
Intermountain Power Service Corporation

PART B - DIVISION B1

INSTRUCTIONS TO BIDDERS

1. Form, Signature, and Delivery of the Proposals: The bidder's Proposal shall be made on the yellow copy of the Bidding Documents. The Specifications printed on white paper shall be retained by the bidder.

   The bidder's name, address, and the date shall be stated in the Proposal. The Proposal shall be signed by the person authorized to bind the bidder.

   The Proposal shall be enclosed in a sealed envelope, plainly marked in the upper left-hand corner with the name and address of the bidder. The envelope shall bear the words "Proposal for," followed by the Specifications Number, the title of the Specifications, and the date of bid opening.

   If the Proposal is mailed, it shall be addressed as follows:

   Purchasing Section
   Intermountain Power Service Corporation
   850 West Brush Wellman Road
   Delta, UT 84624-9546

   If the Proposal is sent by messenger, it shall be delivered to the Administration Building, Intermountain Power Service Corporation, 850 West Brush Wellman Road, Delta, Utah.

2. Interpretations and Addenda: Should a bidder find discrepancies or omissions in the plans, specifications, or other documents, or should there be doubt as to their true meaning, the bidder shall submit to the Buyer a written request for an interpretation or clarification thereof. A request for addenda, interpretation, or clarification shall be delivered to the Buyer marked "Request for Interpretation" and must be received by the Buyer in time to permit a reasonable response before the date of opening bids. Any interpretation of, or change in the documents will be made only by addendum issued to each person to whom Specifications have been issued and will become a part of any Contract awarded. IPSC will not be responsible for or bound by any other explanations or interpretations.

3. Correspondence: All inquiries or correspondence to IPSC prior to award of the Contract shall be addressed to the Buyer.

4. Changes or Alternatives: The bidder shall not change any wording in the documents. Any explanations or alternatives offered shall be submitted in a letter attached to the front of the Bidding Documents. Alternatives which do not substantially comply with IPSC's specifications cannot be considered. Language of negation or limitation of any rights, remedies, or warranties provided by law will not be considered part of the Proposal. Bids offered subject to conditions or limitations may be rejected.

5. Specified Materials or Equivalent: Whenever any particular material or process is specified by a patent or proprietary name, by a trade or brand name, of a manufacturer, such wording is used for the purpose of describing the material or process, fixing the standard of quality required, and shall be deemed to be followed by the words "or equivalent." The bidder may offer any material or process which shall be the equivalent of that so specified, but the bidder must identify the equivalent offered.

6. Language: Everything submitted by the bidder shall be written in the English language.

7. Sales or Use Taxes: Prices quoted by the bidder shall not include any applicable sales or use taxes or Federal Excise Taxes.

8. Duties: Prices quoted by the bidder shall include all applicable duties.

9. Award of Contract: Any award of Contract will be made to the lowest and best, regular responsible bidder. The determination as to which is the lowest and best, regular responsible bidder may be made on the basis of the lowest ultimate cost of the services, materials, equipment, or other Work in place and use. The right is reserved to reject any or all Proposals. Both the time and material and cooling tower work will be included in the bid evaluation.

   Schedule is as important to the bid evaluation as cost. Contractor shall submit a schedule for completion of the cooling tower work only with the bid and that schedule will be used in the evaluation process. Failure to submit a schedule may result in rejection of the bid.

   Within ten (10) calendar days after the date of award of Contract, the successful bidder shall sign the Contract supplied by IPSC. The Contract will be effective upon execution by IPSC. Award of Contract is subject to execution of IPSC's form of Contract Agreement and other Contract Documents.

10. Construction Schedule: The bidder shall submit a Construction Schedule for the helper cooling tower work with the bid as outlined in Section F2.

11. Bidder's Bond: The Proposal shall be accompanied by a certified check or a cashier's check issued by a responsible bank, payable in the state of Utah to the order of Intermountain Power Agency, in an amount not less than One Thousand Dollars ($1,000). A surety bond payable to IPA, IPSC, and LADWP, in a like amount will be accepted in lieu of a check.

    The surety bond shall be submitted on IPSC's Bidder's Bond form. The check or bidder's bond shall be enclosed in the same envelope with the Proposal.

12. Performance Bond: Within thirty (30) calendar days after date of award of Contract, the successful bidder shall furnish a Performance Bond, payable to IPA, IPSC, and LADWP, equal to Fifty-Thousand Dollars ($50,000).

13. Pre-Bid Meeting: A pre-bid meeting will be held at the Intermountain Generating Station in Delta, UT on **January 7**, 2003 **at 1:00 p.m.** All bidders must attend this meeting to be eligible to bid on this Project.

14. Contractor's Organization: Each bidder shall submit, with the Proposal, an organization chart showing the names, titles, and general location of office and field management and supervisory personnel which would be directly responsible for proper execution of the Work.

    Prior to award, those personnel shown in the organization chart who will be directly responsible for interface with IPSC in providing the specified construction services shall meet with the IPSC Chief Operations Officer and his appointed representatives to ensure complete understanding and compatibility.

15. Utah License: Only Proposals from Contractors licensed under the laws of the state of Utah will be considered.

Spec. 45590

PART C - DIVISION C1

BIDDING DOCUMENTS

BIDDER'S BOND

(Not necessary when certified or cashier's check accompanies bid. See below*.)

SURETY BOND

We, the undersigned principal and surety, acknowledge ourselves jointly and severally bound to Intermountain Power Agency (IPA) and Intermountain Power Service Corporation (IPSC) of the state of Utah, and the City of Los Angeles Department of Water and Power (LADWP), in the sum of One Thousand Dollars ($1,000), to be paid to IPA if the attached Proposal shall be accepted and the proposed Contract awarded to said bidder, and said bidder shall fail to execute the Contract and bond for the faithful performance thereof; otherwise this obligation to be void.

Dated: JANUARY 24, 20 03

Firm Name: GSL ELECTRIC, INC., A Utah Corporation, 8540 South Sandy Parkway, Sandy, Utah 84070

By: _____
(Signature)**

(Surety): ST. PAUL FIRE AND MARINE INSURANCE COMPANY, A Minnesota Corporation, 385 Washington Street, St. Paul, MN 55102

By: _____
(Signature) Stirling S. Broadhead, Attorney-In-Fact

*When bidder is submitting a check in lieu of a bond, the check must be made payable to Intermountain Power Agency, must either be certified by a responsible bank, or be a cashier's check issued by a responsible bank, and must be payable in the state of Utah.

If check is submitted herewith, state check number _____ and amount $_____.

**See Form, Signature, and Delivery of the Proposals, Division B1.

NOTE: All signatures above must be written in ink.

FOR: IPP Helper Cooling Tower, Electrical Construction Work, Specification No. 45590

Spec. 45590

PROPOSAL

The undersigned hereby proposes to furnish and deliver **Electrical Construction Work** to the Intermountain Power Service Corporation in accordance with **Specifications 45590.**

The undersigned agrees, upon the acceptance of this Proposal, (a) to execute IPSC's form of Contract (including the Contract Agreement and other Contract Documents identified in said Specifications) for furnishing and delivering the items and services embraced in the accepted Proposal, (b) to perform its obligations under the Contract at the prices stated in the accompanying Proposal Schedule, and (c) to furnish a Performance Bond conditioned upon the faithful performance of the Contract.

The undersigned furthermore agrees that, in case of failure to execute such Contract Agreement and provide the necessary Performance Bond, the check or Bidder's Bond accompanying this Proposal, and the monies payable thereon, shall be forfeited to and remain the property of IPA.

The undersigned declares under penalty of perjury that this Proposal is genuine, is not a sham or collusive, and is not made in the interest or in behalf of any person or entity not herein named. The undersigned further declares under penalty of perjury that the bidder has not directly or indirectly induced or solicited any other bidder to submit a sham bid, or any other person, firm, or corporation to refrain from bidding. The undersigned also declares under penalty of perjury that the bidder has not in any manner sought by collusion to secure for itself an advantage over any other bidder.

I declare under penalty of perjury under the laws of the state of Utah that the foregoing is true and correct.

Date: January 24, 20 03

Bidder: GSL Electric

Address: 8540 So Sandy Parkway

Sandy, Utah 84070

Signed By: _____
(Authorized Signature)

Print Name: Scott Woods

Title: Estimating/Industrial Engineering Manager

RECEIVED
JAN 2 4 2003
PURCHASING

ACKNOWLEDGMENT BY SURETY

STATE OF UTAH }
County of SALT LAKE } ss

On this 24th day of January, 2003, before me personally appeared Stirling S. Broadhead, known to me to be the Attorney-in-fact of St. Paul Fire and Marine Insurance Company the corporation that executed the within instrument, and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, at my office in the aforesaid County, the day and year in certificate first above written.

Candis P. Robbins

Notary Public in the State of Utah
County of Salt Lake
Commission Expires: July 5, 2006

CANDIS P. ROBBINS
NOTARY PUBLIC • STATE OF UTAH
1100 EAST 6600 SOUTH, SUITE 400
SALT LAKE CITY, UT. 84121
COMM. EXP. 07-05-2006

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GSL Electric Inc. • Corporate Office - 8540 South Sandy Pkwy, Sandy, Utah 84070 • 801-565-0088 • 801-565-0099 (Fax)

GSL ELECTRIC

Vision
Commitment
Accountability

VIA HAND DELIVERY

February 11, 2003

Intermountain Power Service Corp.
850 West Brush Wellman Road
Delta, Utah 84624-9546

ATTENTION: Michael G. Nuttall, P.E.

REFERENCE: Intermountain Power
Helper Cooling Tower
GSL# 3547

GENTLEMEN,

GSL Electric is pleased to submit our proposal for the above referenced project, as per the drawings and specifications received 01/09/03. We have also received the E-mail from Mike Nuttall of January 20, 2003 containing "Additional Circuit Clarifications."

Our price to perform this work is **$370,359.00** and is based on our clarifications dated 1/28/03.

At this time we would like to thank you for the opportunity to bid your project, and we hope to work with you towards its successful completion. Should you have any questions or require additional information, please contact the undersigned at (801) 565-0088.

Sincerely,

GSL ELECTRIC

Scott A. Woods
Estimating/Industrial Engineering Manager

xc: John Taft

4780 Idaho Street
Elko, Nevada 89801
775-738-2491 • 775-753-7527 (Fax)

5070 Arville Street, Suite 7
Las Vegas, Nevada 89118
702-364-5313 • 702-364-8348 (Fax)

509 South 48th Street, Suite 102
Tempe, Arizona 85281
480-222-0638 • 480-222-0640 (Fax)

GSL Electric Inc. • Corporate Office - 8540 South Sandy Pkwy, Sandy, Utah 84070 • 801-565-0088 • 801-565-0099 (Fax)

GSL ELECTRIC

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Date: 1/28/03

To: Intermountain Power Service Corp.
850 West Brush Wellman Road
Delta, Utah 84624

Attention: John R Larsen

Ref: IPSC Helper Cooling Tower
GSL Electric, Estimate 3547 Clarifications and Additions

John,

Please note the following breakdown of items for which pricing or verification of coverage was requested, at the Bid Review Meeting.

Site Lighting	$8,447.00
Firewall Penetration Sealing	$3,275.00
Relocation of Flow Transmitters	$6,316.00
Compressor Circuit	$557.00
Total Added Value	**$18,595.00**

Site Lighting
Procure and install the Dura-Line Cablecon 4C #6 WG and the four (4), 250 Watt, HPS fixtures, as well as the installation of the owner furnished poles, as shown on Drawing D-01239-CV-003. This price includes excavation and backfill.

Native excavated soils will be used for backfill purposes.

It is assumed that the pole bases are complete with conduit stub-outs and grounding already in place.

Asphalt cutting, removal and patching are not included.

Firewall Penetration Sealing
Procure and install the material required to restore the cable tray penetrations through the firewall to the original rating.

It is our intention to use a Firestop Systems wall penetration kit for this work.

Flow Transmitter Relocation
Procure and install the additional material required to relocate each of the inlet pipe flow transmitters from the handrail on top of the cooling tower to the 5" above the bottom of the inlet pipe support. This includes conduit, wire and a J-box for each.

Compressor Circuit
Procure and install the material to provide a 30A circuit to the Dry Pipe Fire Protection System Compressor. This includes conduit, wire and a disconnect switch.

Per Foot Add/Delete
In response to the request to provide an add/delete cost for the installation of the owner furnished, 15 kv, 4/0 cable, we offer $2.26/ft as the cost to add footage and $1.96/ft as the amount to be deducted in the event the cable is shorter than footage provided at bid time.

Housekeeping Pads
We have evaluated our allowance for the housekeeping pads and find that we have sufficient allowance for this item.

Existing Fire Barrier Disturbance
We have reviewed this issue and have determined that we have sufficient allowance for this issue in our proposal.

We appreciate the opportunity to discuss our proposal with you and look forward to the possibility of working with your firm on this project. If you should have questions or need additional clarification please call me at (801) 565-0088

Respectfully

C Ralph Allen
Senior Estimator

cc: Scott Woods
Attachment:

GSL
 # 3547

ELECTRICAL CLARIFICATIONS

We have based our bid price on the following assumptions:

1. We have not included for the supply of builders risk insurance in our bid price. We have assumed that the owner will provide builders risk insurance coverage and that the terms and deductibles will be acceptable to GSL, and that GSL will be listed as coinsured with a waiver of subrogation against GSL.

2. We have not included sales and use tax for materials purchased for this project.

3. Our bid price is valid for ninety days.

4. All permits will be paid for by others.

5. Our bid price is based on a 3 month schedule, working 50 hours per week.

6. We have included the installation, but not the supply, of the main Busduct into the electrical building and the 2000 Amp tie bus shown on drawing D-01239-E-001.

7. We have included in our bid price the instillation of conduit, wire, devices and panel for the Fire Alarm System shown on the Electrical Building drawings. Supply of smoke detectors, pull stations and Fire Alarm Panel will be by others. No other Fire Alarm equipment or labor is included in this bid. We have not included the commissioning of the Fire Alarm System. Connections to the flow and tamper switches are included.

8. We have included the following panels in or bid price: 1APA-PPL-123, 2APA-PPL-123, 1APC-PPL-134, 2APC-PPL-134, T-1APA-PPL-123, T-2APA-PPL-123 and LTC-1. The supply of all other transformers, switch gear, MCC's, and control panels will be by others complete with all internal wiring installed and shop tested.

9. We have only allowed for the supply/installation of the cable/conduit shown on the cable/conduit schedule and / or on the layout drawings.

10. We have not included tray covers in our bid price.

11. All cables passing through junction or pull boxes are assumed to continue on as the same size and type. We have not included for combining smaller cables in junction boxes into larger multi-conductor cables. By utilizing trunkline cables, from the junction boxes back to the electrical room, cost savings could be realized.

12. The supply of all PLC equipment w/ the associated control panels, specialty cables, software and the required programming will be by others.

13. The relay coordination study and all relay calibration will be by others. We have only included for setting the relays to the required trip settings.

14. All of the instruments, control devices, valves and manifolds will be supplied by others.

GSL
 # 3547

16. The relay coordination study and all relay calibration will be by others. We have only included for setting the relays to the required trip settings.

17. All instruments, control devices, valves and manifolds with their associated support and mounting hardware will be supplied by others, with the exception of the Drop Switch mounting which we have included in our price.

18. All inline instruments and valves, including process connections, will be installed by the mechanical contractor.

19. No allowance has been made for heat trace and instrument heat packs or for the associated wiring in our bid price.

20. All cable tray is grounded with a continuous #4/0 SDBC cable.

21. We have allowed 100 hours per site in our bid price, for start-up and commissioning. We have allowed for all meggering and continuity/point-to-point testing in our base bid pricing.

Introduction to GSL Electric, Inc.

Our Background
Since its inception in 1981, GSL Electric has operated as a merit shop (non-union) electrical contractor. GSL has completed electrical work on more than 750 projects, totaling over $350,000,000.00.

In the last twelve months, GSL has completed over $59,000,000.00 electrical work with a combined field & office staff of 480+ employees. GSL Electric's corporate office is in Salt Lake City, Utah, and maintains branch offices in Elko, Nevada, Las Vegas, Nevada and Phoenix, Arizona.

GSL provides professional electrical and communication services in heavy industrial, commercial, engineering/design build, health care facilities, food production and manufacturing facilities, destination resorts, distribution centers, and multi-family housing projects.

Experience
GSL Electric employs only fully qualified and licensed engineers and electricians and has extensive experience and is licensed to perform work in eight western states. GSL's success and experience ranges from high voltage line/substation work to telephone data/fiber optics installations.

GSL Services
Our best-in-class team offers comprehensive experience from projects requiring similar expertise. GSL possesses a working knowledge of proposed systems with particular focus on design and construction issues. We utilize a proactive approach, effective communication, project knowledge, and a solid working partnership with our electrical engineers to ensure project success. Our extensive pool of qualified craftsmen positions us to successfully complete the electrical requirements on your site.

Our Mission
Our mission is to always exceed the needs of our clients, employees, and community and to be a benchmark for excellence in the electrical and communications construction industry.

GSL ELECTRIC

Spec. 45590

BOND NO. JP3438

LABOR, MATERIAL, AND PERFORMANCE BOND

1. Know all persons by these presents, that

GSL ELECTRIC, INC., A Utah Corporation
(Insert Contractor's name and address or legal title.)

8540 South Sandy Parkway, Sandy, Utah 84070
as Principal, hereinafter called Contractor, and

ST. PAUL FIRE AND MARINE INSURANCE COMPANY, A Minnesota Corporation
as Surety, hereinafter called Surety, are held and firmly bound unto Intermountain Power Agency, Intermountain Power Service Corporation, hereinafter called IPSC, and the City of Los Angeles Department of Water and Power, as Obligees, in the amount of Fifty Thousand Dollars ($50,000) for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

2. WHEREAS, Contractor has by written agreement dated _____, 20___, entered into a Contract Agreement with IPSC for IPP Helper Cooling Tower in accordance with **Contract No. 03-45590** which Contract is attached hereto and by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE,

3. THE CONDITION OF THIS OBLIGATION is such that, if Contractor shall promptly and faithfully perform said Contract, and shall promptly make payment to all claimants for labor and material used or supplied for use in the performance of the Contract, then this obligation shall be null and void; otherwise, it shall remain in full force and effect.

4. Whenever Contractor shall be, and declared by IPSC to be, in default under the Contract, IPSC having performed IPSC's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

   a. Complete the Contract in accordance with its terms and conditions, or

   b. Obtain a bid or bids for submission to IPSC for completing the Contract in accordance with its terms and conditions, and upon determination by IPSC and Surety of the lowest and best, regular responsible bidder acceptable to IPSC, arrange for a Contract between such bidder and IPSC, and make available as Work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of Completion arranged under this paragraph) sufficient funds to pay the cost of completion less the Balance of the Contract price, but not exceeding the amount of the Bond. The term "Balance of the Contract price," as used in this paragraph, shall mean the total amount payable to Contractor under the Contract and any amendments thereto, less the amount previously paid to Contractor.

5. Upon failure of Contractor to timely pay laborers and material men, Surety agrees to discharge such obligation in an amount not exceeding the sum set forth above and also, in case suit is brought upon this bond, a reasonable attorney's fee to be fixed by the court. This bond shall inure to the benefit of any and all persons named in Title 14, Chapter 2, Utah Code, as amended, so as to give a right of action to such persons or their assigns in any suit brought upon this bond.

6. No right of action shall accrue on this bond to or for the use of any person or corporation other than named herein, or the heirs, executors, administrators, or successors and assigns of the Obligees, except as provided by statutory or regulatory provisions relating to Contractor's bonds upon public and private contracts, the provisions of which are made a part hereof as a supplemental description of the Surety's obligations herein.

7. Surety hereby waives notice of any change orders or extensions of time made by IPSC in accordance with the terms of the Contract.

8. SIGNED AND SEALED this 25th day of February A.D. 2003

In the presence of: GSL ELECTRIC, INC.
(Principal)

(Seal)

(Witness)

(Title)

ST. PAUL FIRE AND MARINE INSURANCE COMPANY
(Surety)

(Seal)

(Witness)

By
(Title) Stirling S. Broadhead, Attorney-In-Fact

The St Paul

POWER OF ATTORNEY

Seaboard Surety Company
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company
St. Paul Mercury Insurance Company

United States Fidelity and Guaranty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.

Power of Attorney No. 20227

Certificate No. 1548951

KNOW ALL MEN BY THESE PRESENTS: That Seaboard Surety Company is a corporation duly organized under the laws of the State of New York, and that St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company and St. Paul Mercury Insurance Company are corporations duly organized under the laws of the State of Minnesota, and that United States Fidelity and Guaranty Company is a corporation duly organized under the laws of the State of Maryland, and that Fidelity and Guaranty Insurance Company is a corporation duly organized under the laws of the State of Iowa, and that Fidelity and Guaranty Insurance Underwriters, Inc. is a corporation duly organized under the laws of the State of Wisconsin *(herein collectively called the "Companies")*, and that the Companies do hereby make, constitute and appoint

Sam W. Clark, John R. Barton and Stirling S. Broadhead

of the City of Salt Lake City, State Utah, their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign its name as surety to, and to execute, seal and acknowledge any and all bonds, undertakings, contracts and other written instruments in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed and sealed this 22nd day of October, 2002.

Seaboard Surety Company
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company
St. Paul Mercury Insurance Company

United States Fidelity and Guaranty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.

PETER W. CARMAN, Vice President

THOMAS E. HUIBREGTSE, Assistant Secretary

State of Maryland
City of Baltimore

On this 22nd day of October, 2002, before me, the undersigned officer, personally appeared Peter W. Carman and Thomas E. Huibregtse, who acknowledged themselves to be the Vice President and Assistant Secretary, respectively, of Seaboard Surety Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, United States Fidelity and Guaranty Company, Fidelity and Guaranty Insurance Company, and Fidelity and Guaranty Insurance Underwriters, Inc.; and that the seals affixed to the foregoing instrument are the corporate seals of said Companies; and that they, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing the names of the corporations by themselves as duly authorized officers.

In Witness Whereof, I hereunto set my hand and official seal.

My Commission expires the 1st day of July, 2006.

REBECCA EASLEY-ONOKALA, Notary Public

86203 Rev. 7-2002 Printed in U.S.A.

IP7_034700

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of Seaboard Surety Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, United States Fidelity and Guaranty Company, Fidelity and Guaranty Insurance Company, and Fidelity and Guaranty Insurance Underwriters, Inc. on September 2, 1998, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that in connection with the fidelity and surety insurance business of the Company, all bonds, undertakings, contracts and other instruments relating to said business may be signed, executed, and acknowledged by persons or entities appointed as Attorney(s)-in-Fact pursuant to a Power of Attorney issued in accordance with these resolutions. Said Power(s) of Attorney for and on behalf of the Company may and shall be executed in the name and on behalf of the Company, either by the Chairman, or the President, or any Vice President, or an Assistant Vice President, jointly with the Secretary or an Assistant Secretary, under their respective designations. The signature of such officers may be engraved, printed or lithographed. The signature of each of the foregoing officers and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Attorney(s)-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and subject to any limitations set forth therein, any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company, and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding upon the Company with respect to any bond or undertaking to which it is validly attached; and

RESOLVED FURTHER, that Attorney(s)-in-Fact shall have the power and authority, and, in any case, subject to the terms and limitations of the Power of Attorney issued them, to execute and deliver on behalf of the Company and to attach the seal of the Company to any and all bonds and undertakings, and other writings obligatory in the nature thereof, and any such instrument executed by such Attorney(s)-in-Fact shall be as binding upon the Company as if signed by an Executive Officer and sealed and attested to by the Secretary of the Company.

I, Thomas E. Huibregtse, Assistant Secretary of Seaboard Surety Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, United States Fidelity and Guaranty Company, Fidelity and Guaranty Insurance Company, and Fidelity and Guaranty Insurance Underwriters, Inc. do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I hereunto set my hand this 24th day of JANUARY, 2003.

Thomas E. Huibregtse, Assistant Secretary

To verify the authenticity of this Power of Attorney, call 1-800-421-3880 and ask for the Power of Attorney clerk. Please refer to the Power of Attorney number, the above-named individuals and the details of the bond to which the power is attached.

The St Paul

POWER OF ATTORNEY

Seaboard Surety Company
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company
St. Paul Mercury Insurance Company

United States Fidelity and Guaranty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.

Power of Attorney No. 20227

Certificate No. 1549118

KNOW ALL MEN BY THESE PRESENTS: That Seaboard Surety Company is a corporation duly organized under the laws of the State of New York, and that St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company and St. Paul Mercury Insurance Company are corporations duly organized under the laws of the State of Minnesota, and that United States Fidelity and Guaranty Company is a corporation duly organized under the laws of the State of Maryland, and that Fidelity and Guaranty Insurance Company is a corporation duly organized under the laws of the State of Iowa, and that Fidelity and Guaranty Insurance Underwriters, Inc. is a corporation duly organized under the laws of the State of Wisconsin *(herein collectively called the "Companies")*, and that the Companies do hereby make, constitute and appoint

Sam W. Clark, John R. Barton and Stirling S. Broadhead

of the City of Salt Lake City, State Utah, their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign its name as surety to, and to execute, seal and acknowledge any and all bonds, undertakings, contracts and other written instruments in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed and sealed this 22nd day of October, 2002.

Seaboard Surety Company
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company
St. Paul Mercury Insurance Company

United States Fidelity and Guaranty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.

PETER W. CARMAN, Vice President

THOMAS E. HUIBREGTSE, Assistant Secretary

State of Maryland
City of Baltimore

On this 22nd day of October, 2002, before me, the undersigned officer, personally appeared Peter W. Carman and Thomas E. Huibregtse, who acknowledged themselves to be the Vice President and Assistant Secretary, respectively, of Seaboard Surety Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, United States Fidelity and Guaranty Company, Fidelity and Guaranty Insurance Company, and Fidelity and Guaranty Insurance Underwriters, Inc.; and that the seals affixed to the foregoing instrument are the corporate seals of said Companies; and that they, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing the names of the corporations by themselves as duly authorized officers.

In Witness Whereof, I hereunto set my hand and official seal.

My Commission expires the 1st day of July, 2006.

REBECCA EASLEY-ONOKALA, Notary Public

86203 Rev. 7-2002 Printed in U.S.A.

IP7_034702

St Paul Surety

St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company
St. Paul Mercury Insurance Company
Seaboard Surety Company

United States Fidelity and Guaranty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc
St. Paul Medical Liability Insurance Company.

Bond No. JP3438

RIDER CONTAINING
DISCLOSURE NOTICE OF TERRORISM COVERAGE

This disclosure notice is required by the Terrorism Risk Insurance Act of 2002. No action is required on your part. This Disclosure Notice is incorporated in and a part of the attached bond.

You should know that, effective November 26, 2002, any losses caused by certified acts of terrorism would be partially reimbursed by the United States under a formula established by the Terrorism Risk Insurance Act of 2002. Under this formula, the United States reimburses 90% of covered terrorism losses exceeding the statutorily established deductible paid by the insurance company providing the coverage.

There is a cap on our liability to pay for such losses if the aggregate amount of insured losses under the Act exceeds $100,000,000,000 during the applicable period for all insured and all insurers combined. In that case, we will not be liable for the payment of any amount which exceeds that aggregate amount of $100,000,000,000.

The portion of your premium that is attributable to coverage for acts of terrorism is $0.00.

IMPORTANT NOTE: THE COST OF TERRORISM COVERAGE IS SUBJECT TO CHANGE ON ANY BOND THAT PREMIUM IS CHARGED ANNUALLY.

SIGNED AND SEALED this 25th day of February, 2003.

SURETY: ST. PAUL FIRE AND MARINE INSURANCE COMPANY [SEAL]

Signature: _____
Attorney-in-Fact
Stirling S. Broadhead

ACORD™ CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YY): 2/25/2003

PRODUCER
Dale Barton Agency
1100 East 6600 South, Suite 400
Salt Lake City, UT 84121-7418
Phone: 801/288-1600 FAX: 801/288-1944

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

COMPANIES AFFORDING COVERAGE

COMPANY A Zurich American Insurance Companies A+ XV
COMPANY B
COMPANY C
COMPANY D

INSURED
Great Salt Lake Electric, Inc.
8540 South Sandy Parkway
Sandy, UT 84070

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
A	GENERAL LIABILITY [X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS MADE [X] OCCUR [ ] OWNER'S & CONTRACTOR'S PROT [X] Independent Contractors [X] XC&U - Explosion, Collapse and Underground	GLO8311582-00	09/30/02	03/01/03	GENERAL AGGREGATE	$ 2,000,000
					PRODUCTS - COMP/OP AGG	$ 2,000,000
					PERSONAL & ADV INJURY	$ 1,000,000
					EACH OCCURRENCE	$ 1,000,000
					FIRE DAMAGE (Any one fire)	$ 100,000
					MED EXP (Any one person)	$ 10,000
A	AUTOMOBILE LIABILITY [X] ANY AUTO [ ] ALL OWNED AUTOS [ ] SCHEDULED AUTOS [X] HIRED AUTOS [X] NON-OWNED AUTOS	BAP8311581-00	09/30/02	03/01/03	COMBINED SINGLE LIMIT	$ 1,000,000
					BODILY INJURY (Per person)	$
					BODILY INJURY (Per accident)	$
					PROPERTY DAMAGE	$
	GARAGE LIABILITY [ ] ANY AUTO				AUTO ONLY - EA ACCIDENT	$
					OTHER THAN AUTO ONLY:	
					EACH ACCIDENT	$
					AGGREGATE	$
	EXCESS LIABILITY [ ] UMBRELLA FORM [ ] OTHER THAN UMBRELLA FORM				EACH OCCURRENCE	$
					AGGREGATE	$
						$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY THE PROPRIETOR/ PARTNERS/EXECUTIVE OFFICERS ARE: [ ] INCL [ ] EXCL				WC STATUTORY LIMITS / OTHER	
					EL EACH ACCIDENT	$
					EL DISEASE - POLICY LIMIT	$
					EL DISEASE - EA EMPLOYEE	$
	OTHER					

Intermountain Power Service Corporation are added as additional insured form U-GL-113-B CW, CA2048, Waiver of Subrolgation U-GL-925-B, Primary and Non-Contributing, Aggregate Limits per Project CG2503 For this job only.

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS
Electrical Construction Work T & M
Contract Number 03-45590

CERTIFICATE HOLDER

Intermountain Power Service Corporation
850 West brush Wellman Road
Delta, Utah 84624-9546

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL XXXXXXXX MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

AUTHORIZED REPRESENTATIVE Dale Barton Agency te

ACORD 25-S (1/95)

IP7_034704

Coverage Change Endorsement

ZURICH

Policy No.	Eff. Date of Pol.	Exp. Date of Pol.	Eff. Date of End.	Producer	Add'l. Prem	Return P
					$	$

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

COMMERCIAL GENERAL LIABILITY COVERAGE PART

IT IS AGREED THAT THIS POLICY IS HEREBY AMENDED AS INDICATED. ALL OTHER TERMS AND CONDITIONS OF THIS REMAIN UNCHANGE

AUTOMATIC ADDITIONAL INSUREDS

THE FOLLOWING PROVISION IS ADDED TO (SECTION II) WHO IS AN INSURED. (CG 00 01)

I. A. ANY ENTITY YOU ARE REQUIRED IN A WRITTEN "INSURED CONTRACT" (HEREINAFTER CALLED ADDITIONAL INSURED) TO NAME AS AN INSURED IS AN INSURED BUT ONLY WITH RESPECT TO LIABILITY ARISING OUT OF YOUR PREMISES, "YOUR WORK" FOR THE ADDITIONAL INSURED, OR ACTS OR OMISSIONS OF THE ADDITIONAL INSURED IN CONNECTION WITH THE GENERAL SUPERVISION OF "YOUR WORK" TO THE EXTENT SET FORTH BELOW:

(1) THE LIMITS OF INSURANCE PROVIDED ON BEHALF OF THE ADDITIONAL INSURED ARE NOT GREATER THAN THOSE REQUIRED BY SUCH CONTRACT.

(2) THE COVERAGE PROVIDED TO THE ADDITIONAL INSURED(S) IS NOT GREATER THAN THAT CUSTOMARILY PROVIDED BY THE POLICY FORMS SPECIFIED IN AND REQUIRED BY THE CONTRACT.

(3) ALL INSURING AGREEMENTS, EXCLUSIONS AND CONDITIONS OF THIS POLICY APPLY.

(4) IN NO EVENT SHALL THE COVERAGES OR LIMITS OF INSURANCE IN THIS COVERAGE FORM BE INCREASED BY SUCH CONTRACT.

B. EXCEPT WHEN REQUIRED OTHERWISE BY "INSURED CONTRACT", THIS INSURANCE DOES NOT APPLY TO:

(1) "BODILY INJURY" OR "PROPERTY DAMAGE" OCCURRING AFTER:

(A) ALL WORK ON THE PROJECT (OTHER THAN SERVICE, MAINTENANCE OR REPAIRS) TO BE PERFORMED BY OR ON BEHALF OF THE ADDITIONAL INSURED(S) AT THE SITE OF THE COVERED OPERATIONS HAS BEEN COMPLETED; OR

(B) THAT PORTION OF "YOUR WORK" OUT OF WHICH THE INJURY OR DAMAGE ARISES HAS BEEN PUT TO ITS INTENDED USE BY ANY PERSON OR ORGANIZATION OTHER THAN ANOTHER CONTRACTOR OR SUBCONTRACTOR ENGAGED IN PERFORMING OPERATIONS FOR A PRINCIPAL AS A PART OF THE SAME PROJECT.

(2) "BODILY INJURY" OR "PROPERTY DAMAGE" ARISING OUT OF ANY ACT OR OMISSION OF THE ADDITIONAL INSURED(S) OR ANY OF THEIR EMPLOYEES, OTHER THAN THE GENERAL SUPERVISION OF WORK PERFORMED FOR THE ADDITIONAL INSURED(S) BY YOU.

(3) "PROPERTY DAMAGE" TO:

(a) PROPERTY OWNED, USED OR OCCUPIED BY OR RENTED TO THE ADDITIONAL INSURED(S)

(b) PROPERTY IN THE CARE, CUSTODY OR CONTROL OF THE ADDITIONAL INSURED(S) OR PROPERTY FOR WHICH THE ADDITIONAL INSURED(S) IS FOR ANY PURPOSE EXERCISING PHYSICAL CONTROL; OR

(c) "YOUR WORK" FOR THE ADDITIONAL INSURED(S).

C. ANY COVERAGE PROVIDED HEREUNDER SHALL BE EXCESS OVER ANY OTHER VALID AND COLLECTIBLE INSURANCE AVAILABLE TO THE ADDITIONAL INSURED(S) WHETHER PRIMARY, EXCESS, CONTINGENT OR ON ANY OTHER BASIS UNLESS A CONTRACT SPECIFICALLY REQUIRES THAT THIS INSURANCE BE PRIMARY, OR YOU REQUEST THAT IT APPLY ON A PRIMARY BA

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

DESIGNATED INSURED

This endorsement modifies insurance provided under the following:

BUSINESS AUTO COVERAGE FORM
GARAGE COVERAGE FORM
MOTOR CARRIER COVERAGE FORM
TRUCKERS COVERAGE FORM

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by this dorsement.

This endorsement identifies person(s) or organization(s) who are "insureds" under the Who Is An Insured Provision of Coverage Form. This endorsement does not alter coverage provided in the Coverage Form.

This endorsement changes the policy effective on the inception date of the policy unless another date is indicated below.

Endorsement Effective:	Countersigned By:
Named Insured:	(Authorized Representati

SCHEDULE

Name of Person(s) or Organization(s):

As required by contract, this coverage shall be primary and any insurance maintained by the additional insured will apply on an excess basis; however, in no event will this additional insured coverage extend beyond the terms and conditions of the written contract.

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as appli ble to the endorsement.)

Each person or organization shown in the Schedule is an "insured" for Liability Coverage, but only to the extent that person organization qualifies as an "insured" under the Who Is An Insured Provision contained in Section II of the Coverage Form

Waiver Of Subrogation (Blanket) Endorsement

Policy No.	Eff. Date of Pol.	Exp. Date of Pol.	Eff. Date of End.	Producer	Add'l. Prem	Return Pr
					$	$

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

This endorsement modifies insurance provided under the:

Commercial General Liability Coverage Part

The following is added to the **Transfer Of Rights Of Recovery Against Others To Us Condition:**

If you are required by a written contract or agreement, which is executed before a loss, to waive your rights of recover others, we agree to waive our rights of recovery. This waiver of rights shall not be construed to be a waiver with resp any other operations in which the insured has no contractual interest.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

DESIGNATED CONSTRUCTION PROJECT(S) GENERAL AGGREGATE LIMIT

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Designated Construction Projects:
All projects

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applica to this endorsement.)

A. For all sums which the insured becomes legally obligated to pay as damages caused by "occurrences" under COVERAGE A (SECTION I), and for all medical expenses caused by accidents under COVERAGE C (SECTION I), which can be attributed only to ongoing operations at a single designated construction project shown in the Schedule above:

1. A separate Designated Construction Project General Aggregate Limit applies to each designated construction project, and that limit is equal to the amount of the General Aggregate Limit shown in the Declarations.
2. The Designated Construction Project General Aggregate Limit is the most we will pay for the sum of all damages under COVERAGE A, except damages because of "bodily injury" or "property damage" included in the "products-completed operations hazard", and for medical expenses under COVERAGE C regardless of the number of:
   a. Insureds;
   b. Claims made or "suits" brought; or
   c. Persons or organizations making claims or bringing "suits".
3. Any payments made under COVERAGE A for damages or under COVERAGE C for medical expenses shall reduce the Designated Construction Project General Aggregate Limit for that designated construction project. Such payments shall not reduce the General Aggregate Limit shown in the Declarations nor shall they reduce any other Designated Construction Project General Aggregate Limit for any other designated construction project shown in Schedule above.
4. The limits shown in the Declarations for E Occurrence, Fire Damage and Medical pense continue to apply. However, insteac being subject to the General Aggregate Li shown in the Declarations, such limits will subject to the applicable Designated Constr tion Project General Aggregate Limit.

B. For all sums which the insured becomes leg obligated to pay as damages caused by "oc rences" under COVERAGE A (SECTION I), for all medical expenses caused by accidents un COVERAGE C (SECTION I), which cannot attributed only to ongoing operations at a sin designated construction project shown in the Sch ule above:

1. Any payments made under COVERAGE A damages or under COVERAGE C for med expenses shall reduce the amount available der the General Aggregate Limit or the Pr ucts-Completed Operations Aggregate Li whichever is applicable; and
2. Such payments shall not reduce any Designa Construction Project General Aggregate Li

C. When coverage for liability arising out of "products-completed operations hazard" is provic any payments for damages because of "bodily jury" or "property damage" included in the "p ducts-completed operations hazard" will reduce Products-Completed Operations Aggregate Li and not reduce the General Aggregate Limit the Designated Construction Project General gregate Limit.

ACORD CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YY) 2/25/2003

PRODUCER
Dale Barton Agency
1100 East 6600 South, Suite 400
Salt Lake City, UT 84121-7418
Phone: 801/288-1600 FAX: 801/288-1944

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

COMPANIES AFFORDING COVERAGE

COMPANY A: Zurich American Insurance Companies A+ XV

INSURED
Great Salt Lake Electric, Inc.
8540 South Sandy Parkway
Sandy, UT 84070

COMPANY B:

COMPANY C:

COMPANY D:

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
	GENERAL LIABILITY				GENERAL AGGREGATE	$
	☐ COMMERCIAL GENERAL LIABILITY				PRODUCTS - COMP/OP AGG	$
	☐ CLAIMS MADE ☐ OCCUR				PERSONAL & ADV INJURY	$
	OWNER'S & CONTRACTOR'S PROT				EACH OCCURRENCE	$
					FIRE DAMAGE (Any one fire)	$
					MED EXP (Any one person)	$
	AUTOMOBILE LIABILITY				COMBINED SINGLE LIMIT	$
	☐ ANY AUTO					
	☐ ALL OWNED AUTOS				BODILY INJURY (Per person)	$
	☐ SCHEDULED AUTOS					
	☐ HIRED AUTOS				BODILY INJURY (Per accident)	$
	☐ NON-OWNED AUTOS					
					PROPERTY DAMAGE	$
	GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
	☐ ANY AUTO				OTHER THAN AUTO ONLY:	
					EACH ACCIDENT	$
					AGGREGATE	$
	EXCESS LIABILITY				EACH OCCURRENCE	$
	☐ UMBRELLA FORM				AGGREGATE	$
	☐ OTHER THAN UMBRELLA FORM					$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY	WC8311583-00	09/30/02	03/01/03	X WC STATUTORY LIMITS ☐ OTHER	
	THE PROPRIETOR/ PARTNERS/EXECUTIVE OFFICERS ARE: X INCL ☐ EXCL				EL EACH ACCIDENT	$ 1,000,000
					EL DISEASE - POLICY LIMIT	$ 1,000,000
					EL DISEASE - EA EMPLOYEE	$ 1,000,000
	OTHER Waiver of Subrogation Applies					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS
Electrical Construction Work T & M
Contract Number 03-45590

CERTIFICATE HOLDER

Intermountain Power Service Corporation
850 West brush Wellman Road
Delta, Utah 84624-9546

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE Dale Barton Agency te

ACORD 25-S (1/95)

WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. (This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.)

This agreement shall not operate directly or indirectly to benefit anyone not named in the Schedule.

Schedule

As agreed by written contract or agreement

This endorsement changes the policy to which it is attached and is effective on the date issued unless otherwise stated.
(The information below is required only when this endorsement is issued subsequent to preparation of the policy.)

Endorsement Effective Policy No. Endorsement No.

Insured Premium $

Insurance Company Countersigned By _____

WC 00 03 13

(Ed. 4-84)

INSURED COPY

ACORD CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YY) 2/25/2003

PRODUCER
Dale Barton Agency
1100 East 6600 South, Suite 400
Salt Lake City, UT 84121-7418
Phone: 801/288-1600 FAX: 801/288-1944

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COMPANIES AFFORDING COVERAGE

COMPANY A National Union Fire Insurance Company A++ XV
COMPANY B
COMPANY C
COMPANY D

INSURED
Great Salt Lake Electric, Inc.
8540 South Sandy Parkway
Sandy, UT 84070

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
	GENERAL LIABILITY ☐ COMMERCIAL GENERAL LIABILITY ☐ CLAIMS MADE ☐ OCCUR ☐ OWNER'S & CONTRACTOR'S PROT				GENERAL AGGREGATE	$
					PRODUCTS - COMP/OP AGG	$
					PERSONAL & ADV INJURY	$
					EACH OCCURRENCE	$
					FIRE DAMAGE (Any one fire)	$
					MED EXP (Any one person)	$
	AUTOMOBILE LIABILITY ☐ ANY AUTO ☐ ALL OWNED AUTOS ☐ SCHEDULED AUTOS ☐ HIRED AUTOS ☐ NON-OWNED AUTOS				COMBINED SINGLE LIMIT	$
					BODILY INJURY (Per person)	$
					BODILY INJURY (Per accident)	$
					PROPERTY DAMAGE	$
	GARAGE LIABILITY ☐ ANY AUTO				AUTO ONLY - EA ACCIDENT	$
					OTHER THAN AUTO ONLY:	
					EACH ACCIDENT	$
					AGGREGATE	$
A	EXCESS LIABILITY ☒ UMBRELLA FORM ☐ OTHER THAN UMBRELLA FORM	BE2131725	09/30/02	09/30/03	EACH OCCURRENCE	$ 2,000,000
					AGGREGATE	$ 2,000,000
						$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY THE PROPRIETOR/ PARTNERS/EXECUTIVE OFFICERS ARE: ☐ INCL ☐ EXCL				WC STATU-TORY LIMITS / OTH-ER	
					EL EACH ACCIDENT	$
					EL DISEASE - POLICY LIMIT	$
					EL DISEASE - EA EMPLOYEE	$
	OTHER					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS
Electrical Construction Work T & M
Contract Number 03-45590

CERTIFICATE HOLDER

Intermountain Power Service Corporation
850 West brush Wellman Road
Delta, Utah 84624-9546

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL XXXXXXXX MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

AUTHORIZED REPRESENTATIVE Dale Barton Agency te

IP7_034711

ACORD™ CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YY): 2/25/2003

PRODUCER
Dale Barton Agency
1100 East 6600 South, Suite 400
Salt Lake City, UT 84121-7418
Phone: 801/288-1600 FAX: 801/288-1944

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COMPANY A Zurich American Insurance Companies A+ XV
COMPANY B
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INSURED
Great Salt Lake Electric, Inc.
8540 South Sandy Parkway
Sandy, UT 84070

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
A	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS MADE X OCCUR OWNER'S & CONTRACTOR'S PROT X Independent Contractors X XC&U - Explosion, Collapse and Underground	GLO8311582-00	03/01/03	03/01/04	GENERAL AGGREGATE	$ 2,000,000
					PRODUCTS - COMP/OP AGG	$ 2,000,000
					PERSONAL & ADV INJURY	$ 1,000,000
					EACH OCCURRENCE	$ 1,000,000
					FIRE DAMAGE (Any one fire)	$ 100,000
					MED EXP (Any one person)	$ 10,000
A	AUTOMOBILE LIABILITY X ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS X HIRED AUTOS X NON-OWNED AUTOS	BAP8311581-00	03/01/03	03/01/04	COMBINED SINGLE LIMIT	$ 1,000,000
					BODILY INJURY (Per person)	$
					BODILY INJURY (Per accident)	$
					PROPERTY DAMAGE	$
	GARAGE LIABILITY ANY AUTO				AUTO ONLY - EA ACCIDENT	$
					OTHER THAN AUTO ONLY:	
					EACH ACCIDENT	$
					AGGREGATE	$
	EXCESS LIABILITY UMBRELLA FORM OTHER THAN UMBRELLA FORM				EACH OCCURRENCE	$
					AGGREGATE	$
						$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY THE PROPRIETOR/ PARTNERS/EXECUTIVE OFFICERS ARE: INCL / EXCL				WC STATU-TORY LIMITS / OTH-ER	
					EL EACH ACCIDENT	$
					EL DISEASE - POLICY LIMIT	$
					EL DISEASE - EA EMPLOYEE	$
	OTHER					

Intermountain Power Service Corporation are added as additional insured form U-GL-113-B CW, CA2048, Waiver of Subrolgation U-GL-925-B, Primary and Non-Contributing, Aggregate Limits per Project CG2503 For this job only.

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS
Electrical Construction Work T & M
Contract Number 03-45590

CERTIFICATE HOLDER

Intermountain Power Service Corporation
850 West brush Wellman Road
Delta, Utah 84624-9546

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ~~ENDEAVOR TO~~ MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, ~~BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.~~

AUTHORIZED REPRESENTATIVE Dale Barton Agency te

ACORD 25-S (1/95)

IP7_034712

ZURICH

Coverage Change Endorsement

Policy No.	Eff. Date of Pol.	Exp. Date of Pol.	Eff. Date of End.	Producer	Add'l. Prem	Return P
					$	$

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

COMMERCIAL GENERAL LIABILITY COVERAGE PART

IT IS AGREED THAT THIS POLICY IS HEREBY AMENDED AS INDICATED. ALL OTHER TERMS AND CONDITIONS OF THIS REMAIN UNCHANGE

AUTOMATIC ADDITIONAL INSUREDS

THE FOLLOWING PROVISION IS ADDED TO (SECTION II) WHO IS AN INSURED. (CG 00 01)

I. A. ANY ENTITY YOU ARE REQUIRED IN A WRITTEN "INSURED CONTRACT" (HEREINAFTER CALLED ADDITIONAL INSURED) TO NAME AS AN INSURED IS AN INSURED BUT ONLY WITH RESPECT TO LIABILITY ARISING OUT OF YOUR PREMISES, "YOUR WORK" FOR THE ADDITIONAL INSURED, OR ACTS OR OMISSIONS OF THE ADDITIONAL INSURED IN CONNECTION WITH THE GENERAL SUPERVISION OF "YOUR WORK" TO THE EXTENT SET FORTH BELOW:

(1) THE LIMITS OF INSURANCE PROVIDED ON BEHALF OF THE ADDITIONAL INSURED ARE NOT GREATER THAN THOSE REQUIRED BY SUCH CONTRACT.

(2) THE COVERAGE PROVIDED TO THE ADDITIONAL INSURED(S) IS NOT GREATER THAN THAT CUSTOMARILY PROVIDED BY THE POLICY FORMS SPECIFIED IN AND REQUIRED BY THE CONTRACT.

(3) ALL INSURING AGREEMENTS, EXCLUSIONS AND CONDITIONS OF THIS POLICY APPLY.

(4) IN NO EVENT SHALL THE COVERAGES OR LIMITS OF INSURANCE IN THIS COVERAGE FORM BE INCREASED BY SUCH CONTRACT.

B. EXCEPT WHEN REQUIRED OTHERWISE BY "INSURED CONTRACT", THIS INSURANCE DOES NOT APPLY TO:

(1) "BODILY INJURY" OR "PROPERTY DAMAGE" OCCURRING AFTER:

(A) ALL WORK ON THE PROJECT (OTHER THAN SERVICE, MAINTENANCE OR REPAIRS) TO BE PERFORMED BY OR ON BEHALF OF THE ADDITIONAL INSURED(S) AT THE SITE OF THE COVERED OPERATIONS HAS BEEN COMPLETED; OR

(B) THAT PORTION OF "YOUR WORK" OUT OF WHICH THE INJURY OR DAMAGE ARISES HAS BEEN PUT TO ITS INTENDED USE BY ANY PERSON OR ORGANIZATION OTHER THAN ANOTHER CONTRACTOR OR SUBCONTRACTOR ENGAGED IN PERFORMING OPERATIONS FOR A PRINCIPAL AS A PART OF THE SAME PROJECT.

(2) "BODILY INJURY" OR "PROPERTY DAMAGE" ARISING OUT OF ANY ACT OR OMISSION OF THE ADDITIONAL INSURED(S) OR ANY OF THEIR EMPLOYEES, OTHER THAN THE GENERAL SUPERVISION OF WORK PERFORMED FOR THE ADDITIONAL INSURED(S) BY YOU.

(3) "PROPERTY DAMAGE" TO:

(a) PROPERTY OWNED, USED OR OCCUPIED BY OR RENTED TO THE ADDITIONAL INSURED(S)

(b) PROPERTY IN THE CARE, CUSTODY OR CONTROL OF THE ADDITIONAL INSURED(S) OR PROPERTY FOR WHICH THE ADDITIONAL INSURED(S) IS FOR ANY PURPOSE EXERCISING PHYSICAL CONTROL; OR

(c) "YOUR WORK" FOR THE ADDITIONAL INSURED(S).

C. ANY COVERAGE PROVIDED HEREUNDER SHALL BE EXCESS OVER ANY OTHER VALID AND COLLECTIBLE INSURANCE AVAILABLE TO THE ADDITIONAL INSURED(S) WHETHER PRIMARY, EXCESS, CONTINGENT OR ON ANY OTHER BASIS UNLESS A CONTRACT SPECIFICALLY REQUIRES THAT THIS INSURANCE BE PRIMARY, OR YOU REQUEST THAT IT APPLY ON A PRIMARY BA

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

DESIGNATED INSURED

This endorsement modifies insurance provided under the following:

BUSINESS AUTO COVERAGE FORM
GARAGE COVERAGE FORM
MOTOR CARRIER COVERAGE FORM
TRUCKERS COVERAGE FORM

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by this dorsement.

This endorsement identifies person(s) or organization(s) who are "insureds" under the Who Is An Insured Provision of Coverage Form. This endorsement does not alter coverage provided in the Coverage Form.

This endorsement changes the policy effective on the inception date of the policy unless another date is indicated below.

Endorsement Effective:	Countersigned By:
Named Insured:	(Authorized Representati

SCHEDULE

Name of Person(s) or Organization(s):

As required by contract, this coverage shall be primary and any insurance maintained by the additional insured will apply on an excess basis; however, in no event will this additional insured coverage extend beyond the terms and conditions of the written contract.

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as appli ble to the endorsement.)

Each person or organization shown in the Schedule is an "insured" for Liability Coverage, but only to the extent that person organization qualifies as an "insured" under the Who Is An Insured Provision contained in **Section II** of the Coverage Form

Waiver Of Subrogation (Blanket) Endorsement

Policy No.	Eff. Date of Pol.	Exp. Date of Pol.	Eff. Date of End.	Producer	Add'l. Prem.	Return Pr
					$	$

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

This endorsement modifies insurance provided under the:

Commercial General Liability Coverage Part

The following is added to the **Transfer Of Rights Of Recovery Against Others To Us Condition:**

If you are required by a written contract or agreement, which is executed before a loss, to waive your rights of recovery others, we agree to waive our rights of recovery. This waiver of rights shall not be construed to be a waiver with resp any other operations in which the insured has no contractual interest.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

DESIGNATED CONSTRUCTION PROJECT(S) GENERAL AGGREGATE LIMIT

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Designated Construction Projects:
All projects

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applica to this endorsement.)

A. For all sums which the insured becomes legally obligated to pay as damages caused by "occurrences" under COVERAGE A (SECTION I), and for all medical expenses caused by accidents under COVERAGE C (SECTION I), which can be attributed only to ongoing operations at a single designated construction project shown in the Schedule above:

1. A separate Designated Construction Project General Aggregate Limit applies to each designated construction project, and that limit is equal to the amount of the General Aggregate Limit shown in the Declarations.
2. The Designated Construction Project General Aggregate Limit is the most we will pay for the sum of all damages under COVERAGE A, except damages because of "bodily injury" or "property damage" included in the "products-completed operations hazard", and for medical expenses under COVERAGE C regardless of the number of:
   a. Insureds;
   b. Claims made or "suits" brought; or
   c. Persons or organizations making claims or bringing "suits".
3. Any payments made under COVERAGE A for damages or under COVERAGE C for medical expenses shall reduce the Designated Construction Project General Aggregate Limit for that designated construction project. Such payments shall not reduce the General Aggregate Limit shown in the Declarations nor shall they reduce any other Designated Construction Project General Aggregate Limit for any other designated construction project shown in Schedule above.
4. The limits shown in the Declarations for E Occurrence, Fire Damage and Medical pense continue to apply. However, instea being subject to the General Aggregate Li shown in the Declarations, such limits will subject to the applicable Designated Consti tion Project General Aggregate Limit.

B. For all sums which the insured becomes leg obligated to pay as damages caused by "oc rences" under COVERAGE A (SECTION I), for all medical expenses caused by accidents un COVERAGE C (SECTION I), which cannot attributed only to ongoing operations at a sir designated construction project shown in the Sch ule above:

1. Any payments made under COVERAGE A damages or under COVERAGE C for med expenses shall reduce the amount available der the General Aggregate Limit or the P ucts-Completed Operations Aggregate Li whichever is applicable; and
2. Such payments shall not reduce any Design Construction Project General Aggregate Li

C. When coverage for liability arising out of "products-completed operations hazard" is provi any payments for damages because of "bodily jury" or "property damage" included in the " ducts-completed operations hazard" will reduce Products-Completed Operations Aggregate L and not reduce the General Aggregate Limit the Designated Construction Project General gregate Limit.

ACORD CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YY) 2/25/2003

PRODUCER
Dale Barton Agency
1100 East 6600 South, Suite 400
Salt Lake City, UT 84121-7418
Phone: 801/288-1600 FAX: 801/288-1944

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

COMPANIES AFFORDING COVERAGE

COMPANY A: Zurich American Insurance Companies A+ XV

INSURED
Great Salt Lake Electric, Inc.
8540 South Sandy Parkway
Sandy, UT 84070

COMPANY B:

COMPANY C:

COMPANY D:

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
	GENERAL LIABILITY				GENERAL AGGREGATE	$
	☐ COMMERCIAL GENERAL LIABILITY				PRODUCTS - COMP/OP AGG	$
	☐ CLAIMS MADE ☐ OCCUR				PERSONAL & ADV INJURY	$
	☐ OWNER'S & CONTRACTOR'S PROT				EACH OCCURRENCE	$
					FIRE DAMAGE (Any one fire)	$
					MED EXP (Any one person)	$
	AUTOMOBILE LIABILITY				COMBINED SINGLE LIMIT	$
	☐ ANY AUTO				BODILY INJURY (Per person)	$
	☐ ALL OWNED AUTOS				BODILY INJURY (Per accident)	$
	☐ SCHEDULED AUTOS				PROPERTY DAMAGE	$
	☐ HIRED AUTOS					
	☐ NON-OWNED AUTOS					
	GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
	☐ ANY AUTO				OTHER THAN AUTO ONLY:	
					EACH ACCIDENT	$
					AGGREGATE	$
	EXCESS LIABILITY				EACH OCCURRENCE	$
	☐ UMBRELLA FORM				AGGREGATE	$
	☐ OTHER THAN UMBRELLA FORM					$
A	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY	WC8311583-00	03/01/03	03/01/04	X WC STATUTORY LIMITS ☐ OTHER	
	THE PROPRIETOR/ PARTNERS/EXECUTIVE OFFICERS ARE: X INCL ☐ EXCL				EL EACH ACCIDENT	$ 1,000,000
					EL DISEASE - POLICY LIMIT	$ 1,000,000
					EL DISEASE - EA EMPLOYEE	$ 1,000,000
	OTHER					
	Waiver of Subrogation Applies					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS
Electrical Construction Work T & M
Contract Number 03-45590

CERTIFICATE HOLDER

Intermountain Power Service Corporation
850 West brush Wellman Road
Delta, Utah 84624-9546

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE Dale Barton Agency te

ACORD 25-S (1/95)

WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. (This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.)

This agreement shall not operate directly or indirectly to benefit anyone not named in the Schedule.

Schedule

As agreed by written contract or agreement

This endorsement changes the policy to which it is attached and is effective on the date issued unless otherwise stated.
(The information below is required only when this endorsement is issued subsequent to preparation of the policy.)

Endorsement Effective Policy No. Endorsement No.

Insured Premium $

Insurance Company Countersigned By _____

WC 00 03 13

(Ed. 4-84)

 INSURED COPY

PART C - DIVISION C2

PROPOSAL SCHEDULE FOR COOLING TOWER ELECTRICAL

Proposal is hereby made to furnish **Electrical Construction Work**, inclusive of all tools, labor, equipment, material, overhead, and administration as needed for electrical construction of two (2) fiberglass cooling towers as specified in the Contract Documents, F.O.B. Intermountain Generating Station (IGS) plant site, 850 West Brush Wellman Road, Delta, Utah, full freight allowed:

Firm Price Bid

Electrical Construction Work for two (2) fiberglass cooling towers:

$ 351,764.00

All Work shall be completed according to the Contract Documents.

Cash Terms: A discount for prompt payment is offered of -0- percent for Contract payments made within -0- calendar days after date of acceptance or delivery and receipt of invoice.

Taxes: The foregoing quoted prices are exclusive of all applicable sales and use taxes.

Form of Business Organization: The bidder shall state below the form of its business organization.

Bidder is a: Corporation, organized under the laws of the state of Utah.
(Corporation, Partnership, Limited Partnership, Individual)

If a partnership, the bidder shall state below the names of the partners. If a corporation, the bidder shall state below the names of the president and of the secretary.

Craig L Taft

Lance Capell

Person to Contact: Should IPSC desire information concerning this Proposal, please contact:

Name: Ralph Allen Telephone No: (801) 565-0088

Address: 8540 So Sandy Parkway

Sandy, Utah 84070

(If different, the address of bidder's chief executive office is:) Same

PART C - DIVISION C3

WAGE BREAKDOWN FORM FOR TIME AND MATERIAL WORK

Hourly Payroll Cost Calculations

The bidder shall complete one (1) copy of this Wage Breakdown Form for each craft and each level of personnel anticipated to be utilized in performing the Work including Foreman, Journeyman, Apprentice, etc., as shown within the bidder's proposed organizational chart.

Craft Electrical Local Union (if applicable): NA

Title Apprentice Location IPSC

These rates effective from January 2003 to December 2003

		Straight Time	Time and a Half	Double Time
1.	Base Rate	17.00	25.50	34.00
2.	Vacation (if applicable)	.50	.50	.50
3.	Subtotal - Fee Base	17.50	26.00	34.50
4.	Subsistence	7.50	7.50	7.50
5.	Travel Pay	----	----	-----
6.	Subtotal	25.00	33.50	42.00
7.	Union Contributions (if applicable): NOT			
	Health and Welfare	1.20	1.20	1.20
	Pension	.60	.60	.60
	Apprenticeship	.70	.70	.70
	Other	1.40	2.08	2.76

Spec. 45590

		Straight Time	Time and a Half	Double Time
8.	Payroll Taxes (FICA, FUI, SUI) 9.15 percent of line 3	1.61	2.38	3.16
9.	Workmens' Compensation 2.06 percent of line 3	.37	.54	.72
10.	Total Hourly Direct Labor Rate	30.88	41.00	51.14

(Total Hourly Labor Rate shall be the basis for the fixed percentage markup.)

11.	Premium Portion of Overtime	13.59	27.02

(No markup is allowed on premium portion of overtime.)

PART C - DIVISION C3

WAGE BREAKDOWN FORM FOR TIME AND MATERIAL WORK

Hourly Payroll Cost Calculations

The bidder shall complete one (1) copy of this Wage Breakdown Form for each craft and each level of personnel anticipated to be utilized in performing the Work including Foreman, Journeyman, Apprentice, etc., as shown within the bidder's proposed organizational chart.

Craft Electrical Local Union (if applicable): NA

Title Apprentice Location IPSC

These rates effective from January 2003 to December 2003

		Straight Time	Time and a Half	Double Time
1.	Base Rate	17.00	25.50	34.00
2.	Vacation (if applicable)	.50	.50	.50
3.	Subtotal - Fee Base	17.50	26.00	34.50
4.	Subsistence	7.50	7.50	7.50
5.	Travel Pay	----	----	-----
6.	Subtotal	25.00	33.50	42.00
7.	Union Contributions (if applicable): NOT			
	Health and Welfare	1.20	1.20	1.20
	Pension	.60	.60	.60
	Apprenticeship	.70	.70	.70
	Other	1.40	2.08	2.76

		Straight Time	Time and a Half	Double Time
8.	Payroll Taxes (FICA, FUI, SUI) 9.15 percent of line 3	1.61	2.38	3.16
9.	Workmens' Compensation 2.06 percent of line 3	.37	.54	.72
10.	Total Hourly Direct Labor Rate	30.88	41.00	51.14

(Total Hourly Labor Rate shall be the basis for the fixed percentage markup.)

11.	Premium Portion of Overtime		13.59	27.02

(No markup is allowed on premium portion of overtime.)

PART C - DIVISION C3

WAGE BREAKDOWN FORM FOR TIME AND MATERIAL WORK

Hourly Payroll Cost Calculations

The bidder shall complete one (1) copy of this Wage Breakdown Form for each craft and each level of personnel anticipated to be utilized in performing the Work including Foreman, Journeyman, Apprentice, etc., as shown within the bidder's proposed organizational chart.

Craft Electrical Local Union (if applicable): NA

Title Journeyman Location IPSC

These rates effective from January 2003 to December 2003

		Straight Time	Time and a Half	Double Time
1.	Base Rate	20.00	30.00	40.00
2.	Vacation (if applicable)	.50	.50	.50
3.	Subtotal - Fee Base	20.50	30.50	40.50
4.	Subsistence	7.50	7.50	7.50
5.	Travel Pay	-----	-----	-----
6.	Subtotal	28.00	38.00	48.00
7.	Union Contributions (if applicable): NOT			
	Health and Welfare	1.20	1.20	1.20
	Pension	.60	.60	.60
	Apprenticeship	.70	.70	.70
	Other	1.64	2.44	3.24

		Straight Time	Time and a Half	Double Time
8.	Payroll Taxes (FICA, FUI, SUI) 9.15 percent of line 3	1.88	2.80	3.71
9.	Workmens' Compensation 2.06 percent of line 3	.43	.63	.84
10.	Total Hourly Direct Labor Rate	34.45	46.37	58.29

(Total Hourly Labor Rate shall be the basis for the fixed percentage markup.)

11.	Premium Portion of Overtime	15.16	30.15

(No markup is allowed on premium portion of overtime.)

PART C - DIVISION C3

WAGE BREAKDOWN FORM FOR TIME AND MATERIAL WORK

Hourly Payroll Cost Calculations

The bidder shall complete one (1) copy of this Wage Breakdown Form for each craft and each level of personnel anticipated to be utilized in performing the Work including Foreman, Journeyman, Apprentice, etc., as shown within the bidder's proposed organizational chart.

Craft Electrical Local Union (if applicable): NA

Title Foreman / Inst Tech Location IPSC

These rates effective from January 2003 to December 2003

		Straight Time	Time and a Half	Double Time
1.	Base Rate	24.00	36.00	48.00
2.	Vacation (if applicable)	.50	.50	.50
3.	Subtotal - Fee Base	24.50	36.50	48.50
4.	Subsistence	7.50	7.50	7.50
5.	Travel Pay	-----	-----	----
6.	Subtotal	32.00	44.00	56.00
7.	Union Contributions (if applicable): NOT			
	Health and Welfare	1.20	1.20	1.20
	Pension	.60	.60	.60
	Apprenticeship	.70	.70	.70
	Other	1.96	2.92	3.88

40.05

PART C - DIVISION C3

WAGE BREAKDOWN FORM FOR TIME AND MATERIAL WORK

Hourly Payroll Cost Calculations

The bidder shall complete one (1) copy of this Wage Breakdown Form for each craft and each level of personnel anticipated to be utilized in performing the Work including Foreman, Journeyman, Apprentice, etc., as shown within the bidder's proposed organizational chart.

Craft Electrical Local Union (if applicable): NA

Title General Foreman Location IPSC

These rates effective from January 2003 to December 2003

		Straight Time	Time and a Half	Double Time
1.	Base Rate	26.00	39.00	52.00
2.	Vacation (if applicable)	.50	.50	.50
3.	Subtotal - Fee Base	26.50	39.50	52.50
4.	Subsistence	7.50	7.50	7.50
5.	Travel Pay	----	-----	-----
6.	Subtotal	34.00	47.00	60.00
7.	Union Contributions (if applicable):			
	Health and Welfare	1.20	1.20	1.20
	Pension	.60	.60	.60
	Apprenticeship	.70	.70	.70
	Other	2.12	3.16	4.20

		Straight Time	Time and a Half	Double Time
8.	Payroll Taxes (FICA, FUI, SUI) 9.15 percent of line 3	2.43	3.62	4.80
9.	Workmens' Compensation 2.06 percent of line 3	.55	.82	1.09
10.	Total Hourly Direct Labor Rate	41.60	57.10	72.59

(Total Hourly Labor Rate shall be the basis for the fixed percentage markup.)

11.	Premium Portion of Overtime		18.31	36.40

(No markup is allowed on premium portion of overtime.)

PART C - DIVISION C4

FIXED PERCENTAGE MARKUPS FOR TIME AND MATERIAL WORK

1. Percentage Markup for Labor: The bidder hereby proposes to furnish all required craft labor and site supervision at the rates detailed in the Wage Breakdown Forms plus the fixed percentage markup of 15 percent. This markup shall constitute full compensation for profit, overhead, insurance, expense for small tools and light equipment with a new unit cost of less than Six Hundred Fifty Dollars ($650), safety equipment, safety training, safety testing, and all other elements of cost not defined herein as actual direct costs. Hourly payroll cost for site office clerk/secretarial labor shall be the flat hourly rate shown in the applicable Wage Breakdown Form, with no markup applied.

2. Percentage Markup for Materials: The bidder hereby proposes to furnish all materials as directed by IPSC, throughout the course of the Work at cost plus the fixed percentage markup of 10 percent. This markup shall constitute full compensation for acquisition of materials as directed and approved by IPSC.

3. Percentage Markup for Subcontractor Work: The bidder hereby proposes to furnish all required subcontractor work, as directed and approved by IPSC, at the direct cost to the bidder plus the fixed percentage markup of 10 percent. The fixed percentage markup of any subcontractor shall not be more than 10 percent higher than the bidder's percentage markup on labor as shown in Article 1 above, e.g., if the bidder's percentage markup for labor is 2 percent, the subcontractor's markup shall not be more than 2.2 percent total. The bidder's markup of the subcontractor's invoice shall constitute full compensation for all costs associated with acquiring, directing, coordinating, processing, controlling, and ensuring acceptable completion of the subcontractor's work. The subcontractor's markup shall constitute full compensation for the subcontractor's profit, field office expense, overheads, safety equipment, safety training, safety testing, and all other elements of cost not defined as actual direct costs.

4. Percentage Markup for Equipment: The bidder hereby proposes to furnish all required equipment, with a new unit cost in excess of Six Hundred Fifty ($650), as approved by IPSC, for the fixed percentage markup of 10 percent. This markup shall be applied to the bidder's actual weekly equipment rental rate. Where the bidder is required to purchase the equipment, the bidder shall be reimbursed at an average weekly rental rate plus the above specified percentage. The average weekly rental rate shall be the average of rates obtained by IPSC from three (3) local equipment rental companies.

PART C - DIVISION C5

EQUIPMENT RENTAL RATES FOR TIME AND MATERIAL WORK

In the event that required equipment is not available through IPSC, the equipment shall be rented by Contractor and charged to IPSC at the following direct cost rental rate:

	Cost per Item			
	Daily	Monthly	Mobilization / Demobilization	
Dump Truck (10 yd with plow)	NA	NA		
Front-End Loader (4 yd bucket)	NA	NA		
Backhoe (Case 580 or equal)	250.00	1960.00	180.00	Includes Fuel
Motor Grader (Cat 12G or equal)	NA	NA		
Pickup Truck (2 wd - 1/2 ton)	60.00	1200.00		
Pickup Truck (4 wd - 3/4 ton)	60.00	1200.00		Includes Fuel
Rough-Terrain Crane (15 ton)	NA	NA		
Truck Crane (80 ton hydraulic)	NA	NA		
Flatbed Truck (1-1/2 ton)	80.00	1600.00	[illegible]	Includes Fuel
Forklift (6,000 lb high-lift)	200.00	1920.00	180.00	Includes Fuel
Air Compressor (125 cfm)	90.00	800.00	180.00	Includes Fuel
Generator (30 kVA)	115.00	900.00	180.00	Includes Fuel
Portable Toilet		200.00	50.00	Weekly Cleaning
Other _____				
Other _____				
Other _____				

Operator costs shall be covered as direct labor based on the hourly payroll cost calculation sheets. The fixed percentage markups for equipment, quoted on page C4-1, shall not be applied to the rates quoted above.

GREAT SALT LAKE ELECTRIC

SUBSTANCE ABUSE POLICY

Effective Date June 1, 1992
Revised January 3, 2003

Section 1 - Philosophy

1 (a) GSL Electric believes that a healthy, productive and quality oriented work force requires safe working conditions free from the effects of drugs and alcohol. Abuse of drugs and alcohol creates a variety of workplace problems, including increased injuries on the job, increased absenteeism, increased financial burdens on health and benefit programs, increased property damage, increased workplace theft, as well as lower levels of employee morale, craftsmanship and productivity.

1 (b) GSL Electric works in an industry, which demands comprehensive safety measures. GSL Electric recognizes its responsibility to employ necessary measures to ensure a safe and healthy working environment for its employees, minimize costs, achieve quality craftsmanship and maximize productivity and profitability.

1 (c) GSL Electric adopts the following substance abuse and testing policy.....

Section 2 - Policy

2 (a) GSL Electric shall provide written notice of this Substance Abuse Policy to all prospective employees and current employees by providing each with a copy of this policy which includes information regarding action GSL Electric will take for violation of the Substance Abuse Policy. As a condition of employment or continued employment, all prospective employees and current employees shall comply with the substance Abuse Policy and sign the Substance Abuse Policy Acknowledgement.

2 (b) GSL Electric prohibits the use, possession or sale of drugs and alcohol at work. Possession of alcoholic beverage containers whether empty, partially full or sealed, or possession of any drug related contraband is prohibited. Reporting to work or working under the influence of drugs or alcohol is strictly prohibited. It is advised and recommended that alcohol should not be consumed within 8 hours of the start of a work shift.

2 (c) GSL Electric intends to test prospective employees and current employees for the presence of drugs and/or alcohol, in accordance with the provisions of this policy, as a condition of employment or continued employment. This Policy extends to the testing of office personnel and GSL Electric management.

2 (d) Employment shall be terminated for any current employee found in violation of the provisions of this Policy. Employment shall be terminated for current employees who refuse to be tested when required. A prospective employee who tests positive for drugs or alcohol shall not be extended an offer of employment. Prospective employees who refuse to be tested shall not be extended an offer of employment. Attempts to falsify test results shall be deemed as a refusal to test.

2 (e) Great Salt Lake Electric's Subcontractors are subject to the Substance Abuse Policy.

(Policy Continued)

2 (f) GSL Electric reserves the right to search employees for possession of drugs, alcohol or other contraband. Entry into or presence at the jobsite or workplace by any employee is conditioned upon GSL Electric's right to search the employee and the employee's personal effects, toolbox or vehicle for drugs, alcohol and contraband. By entering into or being present on a GSL Electric jobsite or worksite, employees are deemed to have consented to such searches, which may include periodic and unannounced searches of anyone while on entering or leaving the jobsite or workplace.

2 (g) Employees may continue to work at the jobsite or workplace while taking prescription drugs needed for the treatment of an illness, providing the medications prescribed do not affect the employee's ability to perform work safely (as determined by GSL Electric) and providing the Client does not prohibit an employee from working while on prescription medication. The employee may be required to have a "Prescription Drug Form" completed and submitted while taking prescription medication. The employee is responsible for awareness of all cautions associated with the use of prescription drugs.

2 (h) Employees may continue to work at the jobsite or work place while taking non-prescription or over-the-counter drugs needed for the treatment of an illness providing the medications prescribed do not affect the employee's ability to perform work safely (as determined by GSL Electric) and providing the Client does not prohibit an employee from working while on non-prescription or over-the-counter drugs. Non-prescription or over-the-counter drugs must be taken in accordance with the manufacturer's dosage recommendations and usage cautions. The employee is responsible for awareness of all cautions associated with the use of non-prescription or over-the-counter drugs.

2 (i) Employees that have had their employment terminated for violation of the Substance Abuse Policy shall be eligible for rehire after a minimum of one year from the date of termination.

Section 3 - Procedures

3 (a) Drug and alcohol tests shall be given under the following circumstances:

A)	Pre-employment drug testing	(Mandatory)
B)	Random drug testing	(Monthly)
C)	Reasonable cause drug testing	(As Needed)
D)	Accident or unsafe practice testing	(As Needed)
E)	Periodic testing	(As Needed)

3 (b) GSL Electric may require urine, blood, breath, saliva or hair samples for testing purposes. The most common procedure for drugs will be urinalysis testing. The most common procedure for alcohol will be blood testing.

3 (c) Mandatory Pre-employment Drug Testing shall be paid for by the prospective employee. Testing shall be completed at a facility and time specified by the hiring office. Upon completion of testing, the prospective employee shall submit evidence to the hiring office that he or she is drug free. With the appropriate reports and receipts submitted, the prospective employee shall be reimbursed for the cost of the testing if the test results are negative. If the test results are positive the prospective employee shall not be hired and the prospective employee shall not be reimbursed for the cost of the testing.

3 (d) GSL Electric shall pay for the cost of an initial FDA approved immunoassay test for Random, Reasonable Cause, Accident/Unsafe Practice or Periodic Testing and for the employee's time while testing, including the time and costs of transporting the employee to the testing facilities if on-site testing is not possible or expedient.

(Procedures Continued)

3 (e) Employees who voluntarily admit to a substance abuse problem before being selected for testing, will be asked to successfully complete a drug or alcohol rehabilitation program or other counseling as prescribed by a licensed practitioner. These employees shall be given leave-of-absence without pay for alcohol or drug usage and will be required to submit to and pass the drug and alcohol screen prior to returning to work. Returning to work shall be contingent upon availability of work as determined by GSL Electric. These employees may be required to pass a drug screen at any time after completing rehabilitation or counseling program. Failure to pass a drug screen after rehabilitation or counseling will result in the termination of employment without the opportunity of rehire.

3 (f) All information from a prospective employee's or a current employee's drug or alcohol test is confidential for purposes other than determining whether the Substance Abuse Policy has been violated. Disclosure of test results to any other person; agency or organization is prohibited unless written authorization is obtained from the employee or prospective employee. The results of a positive drug test shall not be released until the results are confirmed or the initial test is unchallenged. GSL Electric will make every effort to only disclose information relating to drug and alcohol testing to the employee, the employee's supervisor, management and others involved in the administrative process or as required by law.

3 (g) An employee tested periodically or at random shall return to work pending the results of the test. An employee tested for reasonable cause, post-accident investigation or unsafe practice shall not return to work until the results of the test are known. Employees shall not be paid for time off the job while waiting for test results.

3 (h) Upon GSL Electric's notification that a current employee has tested positive for drug or alcohol use, GSL Electric shall use that notification as a basis for termination of employment. If the test results have not been confirmed, and employee, at the employee's expense, may request that the results be confirmed using the same sample. An unchallenged Positive Test or test results that have been confirmed will result in the termination of the employee. If a confirmatory test of the same sample indicates a false positive initial test, the employee shall be reimbursed for the cost of the confirmatory test.

Section 4 - Definitions

For Purposes of this Policy:

4 (a) Alcohol means ethyl or ethanol.

4 (b) Drugs listed under the definition of Confirmed Positive Test, means a controlled substance included in schedule I or II, as defined by Section 802(6) of Title 21 of The United States Code, the possession of which is unlawful under Chapter 13 of the Title. The term "drugs" does not include the use of a controlled substance pursuant to a valid prescription or other use authorized by law.

4 (c) Contraband means anything prohibited by law such as controlled substances not accompanied by prescription and other illegal drug paraphernalia.

4 (d) Drug Test means analysis of a urine, blood, breath, saliva or hair sample for the presence of alcohol or drugs provided by an employee or prospective employee.

4 (e) Employer means Great Salt Lake Electric, Inc., dba GSL Electric Inc.

4 (f) Employee means any person in the service of GSL Electric for compensation (ie. current field employees, office employees and management).

4 (g) Prospective Employee means any person who has made application for employment with GSL Electric.

4 (h) Client means an entity that engages the professional services of GSL Electric.

4 (i) Supervisor means any employee having authority to hire, direct, assign, promote, reward, transfer, furlough, layoff, recall, suspend, discipline or remove other employees or recommend such action.

(Definitions Continued)

4 (j) Same-Sample Testing means the retesting of the original sample. A same-sample test is the only test that shall be authorized as a confirmatory test.

4 (k) Confirmed Positive Test means a same-sample test result that was positive on an initial FDA approved immunoassay test and confirmed by a gas chromatography/mass spectrometry assay (or other confirmatory test approved by the Department of Health and Human Services). The screening cutoff levels for unacceptable amounts of alcohol and drugs are listed below. These levels shall be utilized unless a testing facility, client, contract, or governing body requires compliance with more stringent standards.

DRUGS / ALCOHOL	CUT-OFF LEVELS: INITIAL	CONFIRMATORY
Alcohol	40 mg/dl	40 mg/dl
Barbiturate Metabolites	300 ng/ml	300 ng/ml
Benzodiazepine Metabolites	300 ng/ml	300 ng/ml
Cannabinoids (Marijuana, THC)	50 ng/ml	15 ng/ml
Cocaine Metabolites (Cocaine, Crack)	300 ng/ml	150 ng/ml
Methadone	300 ng/ml	300 ng/ml
Opiates (Codeine, Morphine)	300 ng/ml	300 ng/ml
Phencyclidine (PCP, Angel Dust)	25 ng/ml	25 ng/ml
Propoxyphene	300 ng/ml	300 ng/ml
Sympathomimetic Amines (Includes Amphetamines and Methamphetamines)	1000 ng/ml	500 ng/ml

(mg/dl = milligrams per deciliter)
(40 mg/dl = .04% Blood Alcohol Level)

(ng/ml = nanograms per milliliter)
(nanograms = 10 to the minus 9 grams per milliliter)

Specimen Acceptability Criteria:
Creatinine.....0.2 g/l Specific Gravity.....1.003

4 (l) False Positive Test means that the positive FDA approved immunoassay test results were not confirmed by a gas chromatography/mass spectrometry assay or other confirmatory test approved by the Department of Health and Human Services.

4 (m) Pre-employment Drug Testing means all prospective employees are required to submit to a drug test as a part of the application process.

(Definitions Continued)

4 (n) Random Drug Testing means a system of drug testing imposed without individualized suspicion that a particular individual is using alcohol or drugs, and may either be:
1) Uniform unannounced testing of designated employees occupying a specified area or position; or
2) A statistically random sampling of such employees based on a neutral criterion, such as social security numbers.

4 (o) Reasonable Cause Drug Testing means testing upon:
1) Observable phenomena, such as direct observation of drug use of possession and/or the physical symptoms of being under the influence of a drug;
2) A pattern of abnormal conduct or erratic behavior;
3) Arrest or conviction for a drug-related offense, or the identification of an employee as the focus of a criminal investigation into illegal drug possession, use or trafficking;
4) Information provided either by reliable and credible sources or independently corroborated; or
5) Newly discovered evidence that the employee has tampered with a previous drug test.

Although reasonable cause testing does not require certainty, mere "hunches" are not sufficient to meet this standard. Reasonable Cause Testing shall be obtained only after the employee's appropriate supervisor has gathered and reviewed all information, facts and circumstances leading to and supporting this suspicion. The supervisor shall document in writing a minimum of 4 reasons, which formed a reasonable and prudent basis to warrant the testing. The report shall include the appropriate dates and time of reported drug related incidents, reliable / credible sources of information and the rational leading to the test.

4 (p) Accident or Unsafe Practice testing means testing based on employees involved in on-the-job accidents or who engage in unsafe job-related activities that pose a danger to themselves or others or the overall operation of GSL Electric. An accident is defined as a Worker's Compensation, OSHA or MSHA reportable incident, or damage to property aggregating to $500.00 or more based on actual costs or reliable estimates. Testing should be conducted as soon as possible after the accident or incident and should be completed no later than 30 hours after occurrence of the accident or incident.

4 (q) Periodic Drug Testing means testing occurring or recurring at regular intervals such as a testing frequency required by a client.

Section 6 - Prescription Drug Form

NOTE: Please take this form with you when visiting a doctor to obtain prescription medication. Filling this form out each time you are prescribed medication may save you from returning to your doctor for a signature on this form prior to you being allowed to report for work.

To ensure the personal safety, the following information is required for any prescription medications you now take.

Name:_____

Address:_____

City:_____Telephone #_____

Job Name:_____Job #_____

Prescription (s):_____

_____

Date Prescribed:_____ Prescription Duration_____

Does the drug have any side effects? Yes_____ No_____

If yes, please describe:_____

_____

_____

_____ _____
Prescribing Physician Date

Address_____ Phone #_____

I understand and agree that the information provided in this Prescription Drug Form will be relied upon by GSL Electric and that the information provided herein may be independently verified by contacting eh prescribing physician.

_____ _____
Employee Signature Date

GSL

8540 So Sandy Parkway
Sandy, Utah 84070

SUBSTANCE ABUSE POLICY
ACKNOWLEDGEMENT FORM

I have received a written copy of GSL's Substance Abuse Policy Statement and agree to submit to all of its requirements, including drug testing and searches when required further. I give my consent for the release of the test results to GSL and those clients of GSL who have mandatory drug testing policies and require evidence of compliance.

I understand that compliance with this policy is a condition of my employment or continued employment with GSL. I understand that as a prospective employee, if I am found in violation of this policy, I shall not be offered employment with GSL. As a current employee of GSL, I understand that if I am found in violation of this policy, my employment will be terminated.

Signature of Prospective Employee _____ Date _____

Printed Name of Prospective Employee
Or Printed Name of Current Employee _____ Date _____

Hiring Office _____ Job Name _____ Date _____

PART D - DIVISION D1

CONTRACT DOCUMENTS DESCRIPTION

The Contract Agreement, together with the documents listed in the Table of Contents, thereof, the Reference Specifications, any other documents listed below, and such of the Contractor's Proposal documents as are expressly agreed to by IPSC shall constitute the Contract (the Contract). Said documents are complementary and require complete and finished Work. Anything shown or required of Contractor in any one or more of said documents shall be as binding as if contained in all of said documents. Contractor shall not be allowed to take advantage of any error, discrepancy, omission, or ambiguity in any document, but shall immediately report to the Chief Operations Officer, in writing, any such matter discovered. The Chief Operations Officer will then decide or correct the same and the decision will be final.

List of Drawings and Specifications:

CEntry Drawings	CEntry Specifications	Marley Drawings
D-01239-E-001	E-SS-100	221443-02-491
D-01239-E-003	CEntry Cable & Raceway	
D-01239-E-004	Schedule	
D-01239-E-007		
D-01239-E-008		
D-01239-E-009		
D-01239-E-010		
D-01239-E-011		
D-01239-E-012		
D-01239-E-100		
D-01239-E-101		
D-01239-E-102		
D-01239-E-103		
D-01239-S-001		
D-01239-CV-003		
E-01239-SK-001		

IPSC Unit 1 Drawings	IPSC Unit 2 Drawings	IPSC Common Drawings
64.0404.05-10046	64.0404.05-20046	64.0404.05-90007
64.0404.05-10048	64.0404.05-20048	64.0404.05-90008
64.0404.05-10049	64.0404.05-20049	64.0404.05-90009
64.0404.05-10050	64.0404.05-20050	
64.0404.05-10051	64.0404.05-20051	
64.0404.05-10052	64.0404.05-20052	
64.0404.05-10053	64.0404.05-20053	
64.0404.05-10054	64.0404.05-20054	
64.0404.05-10055	64.0404.05-20055	
64.0404.05-10056	64.0404.05-20056	
64.0404.05-10057	64.0404.05-20057	
64.0404.05-10058	64.0404.05-20058	
64.0404.05-10059	64.0404.05-20059	
64.0404.05-10060	64.0404.05-20060	
64.0404.05-10062	64.0404.05-20062	
64.0404.05-10063	64.0404.05-20063	
Black & Veatch Unit 1 Drawings	**Black & Veatch Unit 2 Drawings**	**Black & Veatch Common Drawings**
1APC-K2259	2APC-K2259	9BSH-K2301
1APC-K2260	2APC-K2260	9BSH-K2801
1IND-K2804	2IND-K2804	9FPU-K2813
1HRC-K2225A	2HRC-K2225A	9FPU-K2814
1HRC-K2225C	2HRC-K2225C	
1HRC-K2226A	2COF-K2801D	
1COF-K2801D	2HRC-K2226A	

Black & Veatch Unit 1 Drawings	Black & Veatch Unit 2 Drawings	Black & Veatch Common Drawings
1HRC-K2226A	2HRC-K2226C	
1HRC-K2226C	2HRC-K2227A	
1HRC-K2227A	2HRC-K2227C	
1HRC-K2227C	2HRC-K2228A	
1HRC-K2228A	2HRC-K2228C	
1HRC-K2228C	2HRC-K2350	
1HRC-K2350	2HRC-K2351	
1HRC-K2351	2HRC-K2352	
1HRC-K2352	2HRC-K2353	
1HRC-K2353	2HRC-K2819A	
1HRC-K2819A	2HRC-K2819B	
1HRC-K2819B	2HRC-K2820A	
1HRC-K2820A	2HRC-K2820B	
1HRC-K2820B	2HRC-K2820C	
1HRC-K2820C	2HRC-K2820D	
1HRC-K2820D	2INA-K2821	
1INA-K2821	2INB-K2933	
1INB-K2941	2INB-K2814	
1INB-K2814		

Black & Veatch New Drawings	Black & Veatch New Drawings	Black & Veatch New Drawings
1HRC-K2607	2HRC-K2607	9EEC-E2300A
1HRC-K2608	2HRC-K2608	9EEC-E2300B

Black & Veatch New Drawings	Black & Veatch New Drawings	Black & Veatch New Drawings
1HRC-K2804 A & B	2HRC-K2804 A & B	9EEC-E2301
1HRC-K2809 A & B	2HRC-K2809 A & B	9EEC-E2316
1HRC-K2809C	2HRC-K2809C	9EEC-E2317
1HRC-K2811E	2HRC-K2811E	9EEC-E2332
1UUU-K2000B	2HRC-M2022A	9EEC-E3250
1HRC-M2022A	2HRC-M2022F	SK-IGS0202-01
1HRC-M2022F	2APA-E1643	SK-IGS0202-03
1APA-E1643	2APC-E1614	
1APC-E1614	2APC-E1229	
1APC-E1229	2BSU-E5014	
1EEC-E3012A	2EEC-E3012A	

PART E - DIVISION E1

GENERAL CONDITIONS

1. Definitions: The following words shall have the following meanings:

   a. Bidder: The person, firm, or corporation adopting and submitting a Proposal under these Specifications.

   b. Buyer: The Purchasing Agent for IPSC.

   c. Chief Operations Officer: The President and Chief Operations Officer of IPSC, or other representatives designated by the President and Chief Operations Officer acting within the limits of their authority.

   d. Contract Administrator: The IPSC employee designated by the Chief Operations Officer with primary responsibility for administration of the Contract, or other representatives designated by the Contract Administrator acting within the limits of their authority.

   e. Contractor: The person, firm, or corporation to whom the Contract is awarded.

   f. Directed, Required, Approved, etc.: The words *directed, required, approved, permitted, ordered, designated, prescribed, instructed, acceptable, accepted, satisfactory,* or similar words shall refer to actions, expressions, and prerogatives of the Contract Administrator unless otherwise expressly stated.

   g. Gallon: Liquid volume of 231 cubic inches at 60 degrees Fahrenheit.

   h. IGS: Intermountain Generating Station located at 850 West Brush Wellman Road, Delta, Utah 84624.

   i. IPA: Intermountain Power Agency, the owner of Intermountain Power Project, and a political subdivision of the state of Utah, organized and existing under the Interlocal Co-operation Act, Title 11, Chapter 13, Utah Code Annotated 1953, as amended.

   j. IPP: Intermountain Power Project, consisting of Intermountain Generating Station, Intermountain Railcar, Intermountain Converter Station, Adelanto Converter Station, Intermountain AC Switchyard and associated transmission lines, microwave stations, and support facilities.

   k. IPSC: Intermountain Power Service Corporation, a nonprofit corporation, furnishing personnel to support the Operating Agent in the performance of operation and maintenance.

l. Operating Agent, or LADWP: The City of Los Angeles Department of Water and Power which is responsible for operation and maintenance for IPP.

m. Project Coordinator: The IPSC employee designated by the Chief Operations Officer with primary responsibility for coordination of a given project, including acting as liaison between IPSC and Contractor.

n. Reference Specifications: Those bulletins, standards, rules, methods of analysis or tests, codes, and specifications of other agencies, engineering societies, or industrial associations referred to in these Specifications. These refer to the latest edition, including amendments published and in effect at the date of the Invitation for Proposal, unless specifically referred to by edition, volume, or date. Unless the context otherwise requires, Reference Specifications also include all amendments published or adopted after the date of the Invitation for Proposal.

o. Subcontractor: A person, firm, or corporation, other than the Contractor and employees thereof, who supplies labor, services, or materials for a portion of the Work to be performed by the Contractor under this Contract.

p. Ton: The short ton of 2,000 pounds.

q. Work: The services, materials, equipment, and other performance identified in these Specifications and other Contract Documents to be provided by Contractor.

2. Materials and Work: All Work shall comply with these Specifications. All materials used or supplied, and all equipment furnished, shall be new and unused, but this requirement shall not preclude the use of recycled materials in the manufacturing processes. All Work shall be done by qualified workers in a thorough and workmanlike manner that would pass without objection in both Contractor's trade and IPSC's and IPA's industry. Materials, equipment, workmanship, and other Work not definitely specified, but incidental to and necessary for the Work, shall conform to the best commercial practice for the type of Work in question and be of a quality that passes without objection in Contractor's trade and IPSC's and IPA's industry.

3. Nondiscrimination: The applicable provisions of Executive Order No. 11246 of September 24, 1965, and Bureau of Land Management regulations, and all other applicable governmental regulations pertaining to nondiscrimination in employment in the performance of contracts, are incorporated herein by reference, and made a part hereof as if they were fully set forth herein. During the performance of the Contract, Contractor shall not discriminate in its employment practices against any employee or applicant for employment because of the employee's or applicant's race, religion,

national origin, ancestry, sex, age, or physical disability. All subcontracts awarded pursuant to the Contract shall contain a like nondiscrimination provision.

4. Governing Law; Venue: The Contract shall be governed by the substantive laws of the state of Utah, regardless of any rules on conflicts of laws or choice of law that would otherwise cause a court to apply the laws of any other state or jurisdiction. Any action, in law or in equity, concerning any alleged breach of or interpretation of the Contract, or concerning any tort in relation to the Contract or incidental to performance under the Contract, shall be filed only in the state or federal courts located in the state of Utah.

5. Patents and Intellectual Property: Contractor shall fully indemnify and, at the election of IPA, defend IPSC, IPA, and the Operating Agent against any and all liability, whatsoever, by reason of any alleged infringement of any intellectual property rights (including, but not limited to, patents, copyrights, trademarks, or trade secrets) on any article, process, method, or application used in any designs, plans, or specifications provided under the Contract, or by reason of Contractor's manner of performance under the Contract, or by reason of use by IPSC of any article, process, or material specified by Contractor.

6. Contractor's Address and Legal Service: The address given in the Proposal shall be considered the legal address of Contractor and shall be changed only by advance written notice to IPSC. Contractor shall supply an address to which certified mail can be delivered. The delivery of any communication to Contractor personally, or delivery to such address, or the depositing in the United States Mail, registered or certified with postage prepaid addressed to Contractor at such address, shall constitute a legal service thereof.

7. Assignment of Contract Prohibited: Contractoror shall not assign or otherwise attempt to dispose of the Contract, or any rights hereunder, or of any monies due or to become due hereunder, unless authorized by the prior written consent of the Chief Operations Officer. The Contract, and Contractor's rights hereunder (including rights of collection) are nonassignable without the Chief Operations Officer's prior written consent. No right or claim can be asserted against IPSC, IPA, or the Operating Agent, in law or equity, by any person, reason of any assignment, or disposition unless so authorized.

   If Contractor, without such prior written consent, purports to assign or dispose of the Contract, or any right or interest hereunder, IPSC may at its option terminate the Contract. Such termination shall relieve and discharge IPSC, IPA, and the Operating Agent from any and all liability, duties, and obligations to Contractor, and to any assignee or transferee thereof.

8. Quality Assurance: IPSC has the right to subject any or all materials, services, equipment, or other Work furnished and delivered under the Contract to rigorous inspection and testing. (Unless otherwise specifically provided in the Contract with respect to specific materials, services, equipment, or other Work, IPSC has no duty to inspect, test, or specifically accept.) Before offering any material, services, equipment, or other Work for inspection, testing, delivery, or acceptance, Contractor shall eliminate all items or portions which are defective or do not meet the requirements of these Specifications. If any items or portions are found not to meet the requirements of these Specifications, the lot, or any faulty portion thereof, may be rejected. Only the Contract Administrator may accept any material, service, equipment, or other Work as complying with these Specifications on behalf of IPSC.

IPSC may inspect and reject materials, services, equipment, or other Work tendered or purchased under the Contract at any reasonable location IPSC may choose (including, but not limited to, points of origin, while in transit to IPSC, IPSC's specified receiving points, IPSC's storage sites, or any point of use or installation). Inspection can include any testing that IPSC deems necessary or convenient to determine compliance with these Specifications. The expense of any initial tests will be borne by IPSC. All expenses of subsequent or additional tests will be charged against Contractor when due to failure of first-offered materials, services, equipment, or other Work to comply with these Specifications.

The fact that the materials, services, equipment, or other Work have or have not been inspected, tested, or accepted by IPSC, whether voluntarily or as required by any specific provision in the Contract, shall not relieve Contractor of responsibility in case of later discovery of nonconformity, flaws, or defects, whether patent or latent.

9. Extra Work, Reduced Work, and Change Orders by IPSC: IPSC reserves the right at any time before final acceptance of the entire Work to order Contractor to furnish or perform extra Work, or to make changes altering, adding to, or deducting from the Work, without invalidating the Contract. Changes shall not be binding upon either IPSC or Contractor unless made in writing in accordance with this Article.

Changes will originate with the Chief Operations Officer who will transmit to Contractor a written request for a Proposal covering the requested change, setting forth the changed Work in detail, and including any required supplemental plans or specifications. Upon receipt of such request, Contractor shall promptly submit in writing to the Chief Operations Officer a Proposal offering to perform such change, a request for any required extension of time caused by such change, and an itemized statement of the cost or credit for the proposed change. Failure of Contractor to include a request for extension of time in the Proposal shall constitute conclusive evidence that such extra Work or revisions will entail no delay and that no extension of time will be required.

If Contractor's Proposal is accepted by IPSC, a written change order will be issued by the Chief Operations Officer stating that the extra Work or change is authorized and granting any required adjustments of the Contract price and of time of completion. If Contractor's Proposal is rejected by IPSC, then IPSC may order the additional or changed work from other vendors.

Additional work or changes pursuant to the change order shall be performed in accordance with the terms and conditions of these Specifications. No extra Work shall be performed or change made unless pursuant to such written change order, and no claim for an addition to the Contract price shall be valid unless so ordered.

Notwithstanding anything in the preceding paragraphs to this Article, IPSC may issue a written order reducing the Scope of Work without issuing a request for Proposal. Any such reduction in the Scope of Work shall be effective upon issuance. Reductions ordered by IPSC shall constitute partial terminations and shall reduce the price to be paid by IPSC.

10. Changes at Request of Contractor: Changes may be made to facilitate the Work of Contractor. Such changes may only be made without additional cost to IPSC, without extension of time, and pursuant to written permission from the Chief Operations Officer. Permission for such changes shall be requested in writing by Contractor to the Chief Operations Officer.

11. Time is of the Essence and Extensions of Time: Time is of the essence to the Contract. Delivery and other performance of Work must be completed within the times and by the dates specified. Time for delivery or other performance of Work shall not be extended except as provided in this Article. Failure to deliver or otherwise perform Work within the times and by the dates specified shall constitute a default and be grounds for IPSC to immediately terminate the Contract.

If Contractor makes a timely written request in accordance with this Article, the time for delivery or other performance of Work will be extended by a period of time equivalent to any delay in the whole Work which is: (1) authorized in writing by the Chief Operations Officer, (2) caused solely by IPSC, or (3) due to unforeseeable causes (such as war, strikes, or natural disasters) and which delay is beyond the control and without the fault or negligence of Contractor and subcontractors.

Contractor shall promptly notify the Chief Operations Officer in writing at both the beginning and ending of any delay, of its cause, its effect on the whole Work, and the extension of time claimed. Failure of Contractor to provide such written notices and to show such facts shall constitute conclusive evidence that no excusable delay has occurred and that no extension of time is required.

The Chief Operations Officer will ascertain the facts and the extent of the delay and will extend the time for delivery and completion of Work when the findings of fact justify such an extension. The Chief Operations Officer's determination will be final and conclusive.

IPSC will be responsible for granting extensions of time as herein provided, but will not otherwise be responsible in any manner or liable to any extent for damage directly or indirectly suffered by Contractor as a result of any delay.

12. Protests and Claims: If Contractor considers any demand of the Chief Operations Officer to be outside of the requirements of the Contract, or considers any amount of payment, or any record, ruling, or other act, omission, or determination by the Chief Operations Officer to be unreasonable, Contractor shall promptly deliver to the Chief Operations Officer a written statement of the protest and of the amount of compensation or nature of accommodation, if any, claimed.

Upon written request by the Chief Operations Officer, Contractor shall provide access to all records containing any evidence relating to the claim or protest.

Upon review of the protest, claim, and evidence, the Chief Operations Officer will promptly advise Contractor in writing of the final decision which will be binding on all parties.

The requirements of this Article shall be in addition to, and shall not be construed as waiving claims provisions of the Statutes of the state of Utah. Contractor is deemed to have waived and does waive all claims for extensions of time and for compensation in addition to the Contract price except for protests and claims made and determined in accordance with this Article.

13. Limitation of Liability; Responsible Party: It is understood and agreed that IPA shall be the sole party or person liable to Contractor for payments under or pursuant to the Contract, and for any breaches, defaults, or for any torts in the performance of or in relation to the Contract by IPA, or the Operating Agent, or IPSC, or any officers, agents, or employees thereof. Contractor hereby expressly covenants and agrees that no suit shall be brought by Contractor against the Operating Agent, or IPSC, or their or IPA's officers, agents, or employees, or any of the purchasers of power from IPA, and that all rights or remedies that Contractor may have or that may arise under or in relation to the Contact shall be asserted by Contractor solely against IPA. Without limiting the foregoing provisions of this Article, Contractor shall have no right to assert or recover in Contract or in tort, damages, or losses in the nature of consequential damages, incidental damages, punitive, or exemplary damages.

14. Independent Contractor: Contractor shall perform the Work as an independent contractor in the pursuit of its independent calling. Contractor is not an employee, agent, joint venturer, partner, or other representative of IPA, IPSC, or the Operating Agent and shall be under the control of IPSC only to provide the services requested and not as to the means or manner by which the Work is to be accomplished. Contractor has no authority to act for, bind, or legally commit IPA, IPSC, or the Operating Agent in any way.

15. Drug Policy: In conjunction with the bid package, Contractor shall submit a current copy of its drug policy for review. IPP facilities are a drug free and zero tolerance workplace. Contractor's employees and its subcontractors' employees who are to perform Work or otherwise be at the IPP site shall participate in a drug testing program prior to arrival, and at any additional time(s) during the Contract as IPSC may request.

16. Security and Safety Compliance: Contractor and its employees, agents, representatives, and/or subcontractors, while performing Work on IPSC premises, or who are otherwise on IPA premises, shall fully comply with all security, fire prevention, and safety rules and procedures in force at IPP. IPSC has the right (but no duty) to make periodic and random inspections of the persons, and of their respective property, upon entering, at any time while on, and when departing any IPA or IPP facility. Such persons subject to inspection include Contractor, any subcontractor, and their respective employees, agents, and representatives. Property subject to inspection includes, but is not limited to, vehicles, clothing, toolboxes, lunch boxes, any other carrying case, tools or equipment, and anything contained therein.

    Contractor will be directed to specified areas for parking vehicles and equipment by the Contract Administrator. Certain areas of the IPSC plant site are restricted to IPSC vehicles only. Exceptions to the parking restriction will be made on an as needed basis through Contractor's respective Contract Administrator. Contractor shall make its employees, agents, representatives, and/or subcontractors aware of all areas that are subject to restricted parking.

17. Nonexclusive: This is a nonexclusive Contract. IPSC reserves the right to obtain services, materials, equipment, or other Work from additional contractors or suppliers.

18. Confidential Information: These Specifications, drawings, designs, manufacturing data, and any other information transmitted to Contractor by IPSC in connection with the performance of the Contract are the property of IPSC and are disclosed in confidence upon the condition that, and Contractor's agreement that, they are not to be reproduced or copied, or used for furnishing information or equipment to others, or for any other purpose.

PART E - DIVISION E2

ADDITIONAL GENERAL CONDITIONS

1. Guarantee: Contractor guarantees and warrants for a minimum period of one (1) year after delivery, and for such longer period as may be specified by the applicable statute of limitations, that all services, materials, equipment, and other Work furnished are free from defects and otherwise conform to the terms of the Contract, including, but not limited to, the Article entitled "Materials and Work" in Part E, Division E1, Article 2, General Conditions.

   Contractor shall repair or replace, as IPSC may direct, all defective services, materials, equipment, or other Work. Such repair or replacement shall be F.O.B. at such destination as IPSC may direct (e.g., contract delivery point, point of installation, point of consumption, etc.) IPSC's right to require repair or replacement is in addition to any other remedies that may be available for breach of the foregoing guarantees and warranties.

   Contractor shall, for the protection and benefit of IPSC, IPA, and LADWP, obtain guarantees conforming to the foregoing two paragraphs from each of its vendors and subcontractors with respect to their material, equipment services, or other portion of the Work. Such guarantees from vendors and subcontractors shall be in addition to, and not in lieu of, Contractor's own guarantees.

2. Payment for Fixed Price Helper Cooling Tower Work: On or about the first day of each month, Contractor shall submit an estimate of the value of the erection Work done during the previous calendar month. Based upon agreement with the Contract Administrator on the estimated value of Work completed, Contractor shall prepare and submit a monthly progress payment invoice. As determined by the Contract Administrator, the estimated cost of repairing, replacing, or rebuilding a part of the Work or replacing materials which do not conform to the Contract Documents will be deducted from the estimated value. Contractor shall furnish to the Contract Administrator, such detailed information as the Contract Administrator may need to verify the monthly estimates.

   Payment will be made within thirty (30) calendar days after delivery, acceptance, and receipt of the invoice.

   Invoices shall be submitted in duplicate to Accounts Payable, Intermountain Power Service Corporation, 850 West Brush Wellman Road, Delta, UT 84624-9546. All letters pertaining to invoices shall be addressed to the foregoing address.

   In all cases, the amount of the applicable sales tax or use tax shall be separately stated on the invoice.

3. Payments for Time and Material Work: Payment will be based on Contractor's monthly payment request accompanied by Contractor's materials itemization list(s) and daily time sheets, signed by IPSC, showing all man-hours. These time sheets shall indicate the craft classification, number of craftsmen, and hours worked.

   As determined by IPSC, the estimated cost of repairing, replacing, or rebuilding any part of the Work or replacing materials which do not conform to the Contract documents will be deducted from the records of costs.

   All monthly payment requests for the Work shall separately identify all sales and use taxes paid on goods and services required for the Work.

   Payment to Contractor or subcontractor(s) shall not constitute approval or acceptance of any part of the Work, and shall not relieve Contractor from any responsibility or liability for or related to the fulfillment of the Contract.

   IPSC may refuse to approve the whole or any part of Contractor's monthly payment request, when, in the Contract Administrator's opinion, Contractor is either in violation of any of the provisions of the Contract or has submitted an incorrect payment request.

   a. Payment Schedule: Payment for the Work will be made in accordance with the following schedule:

      On or about the first day of each month, after mobilization, Contractor shall submit, to the Contract Administrator, records of direct costs of labor and materials for the Work performed during the previous calendar month. Based upon agreement with the Contract Administrator on the costs submitted, Contractor shall prepare and submit, to the Contract Administrator, a monthly payment request.

      Contractor shall furnish to IPSC such detailed information as IPSC may request to aid in the verification of the monthly payment request. Payment will be made within thirty (30) days of Contractor's payment request.

   b. Basis of Payment: Contractor will be reimbursed for actual direct costs of labor and materials furnished as part of the Work under the Contract plus the appropriate fixed percentage markup as quoted in the Proposal section of the Contract. The fixed percentage markup will be paid as full compensation for Contractor's profit, general superintendence, field office expense (excluding office clerk/secretarial help for which a Wage Breakdown Form shall be included in the Proposal Section), safety equipment, safety training, safety testing, overheads, and all other elements of cost not defined herein as an actual direct

cost. The actual direct cost shall include only those costs expended in direct performance of the Work. The quantities of all labor and materials provided shall be subject to the approval of IPSC at all times.

The following categories shall be reimbursed as indicated. Each item eligible for reimbursement, in accordance with the following categories, shall be individually listed in Contractor's request for payment:

(1) Actual man-hours expended in direct performance of the Work. Labor man-hours shall not include administrative and management staff above the level of general (second level) foreman.

(2) Rental charges for equipment used in direct performance of the Work with a new cost above Six Hundred Fifty Dollars ($650). All reimbursable, rental equipment shall be approved by the Project Coordinator prior to Contractor rental. Rental of equipment, quoted in the Proposal Section of the Contract, shall be charged to IPSC at the Contract unit prices quoted, without additional markup.

(3) Rental charges for tools used in direct performance of the Work, with a value of Six Hundred Fifty Dollars ($650) or more, with the approval of the Contract Administrator.

(4) Cost of all consumables that Contractor is authorized to consume by the Project Coordinator. Consumables shall be reimbursed in the same manner as other materials. Examples of consumables include, but are not limited to:

(a) Sandblast grit.

(b) Grinding/Sanding discs.

(c) Solvents.

(d) Fuels.

(e) Lubricants.

(5) Sales and use taxes paid on material goods.

(6) All safety related equipment, tools, personal protective devices, training, and testing shall not be eligible for reimbursement but shall be contained

within the bid Contractor labor markup. Examples of personal protective devices include, but are not limited to:

(a) Work gloves.

(b) Welders gloves.

(c) Coveralls.

(d) Hardhats.

(e) Glasses.

(f) Respirators.

The cost of materials and services which IPSC specifically directs Contractor to furnish on an actual direct cost basis will be reimbursed with the appropriate markup in accordance with quotes specified in the Proposal Section of the Contract.

Payment for the above items, except rental for equipment listed in the Proposal Section of the Contract, shall be based on Contractor's actual invoices and shall include the cost of transportation to job site, where applicable.

All costs for home office management and administration, overhead, profit, etc., are to be included in the labor markup. However, in any case, where the bidder intends to use home office personnel for labor and resource acquisition and allocation, a detailed Wage Breakdown Form must be provided for an "Office Contract Administrator." Direct labor provided by the Office Contract Administrator shall be shown on the daily labor invoice submitted to the IPSC Contract Administrator. Specific explanation of the Work accomplished by the Office Contract Administrator shall be provided with the daily invoice.

Labor costs for equipment repair shall not be reimbursed as a direct cost. Equipment repair costs shall be treated as overhead and included within the appropriate equipment percentage markup.

Travel costs for normal labor forces to and from the job site (if any) shall be shown as Travel Pay on the respective Wage Breakdown Form.

Reasonable cost for mobilization and demobilization of materials and equipment (including labor required for materials and equipment mobilization and

demobilization) is to be considered reimbursable at the normal labor and equipment rental rates.

Purchase of all materials, including consumable materials, shall be authorized by the Project Coordinator in all cases. The Project Coordinator may often opt to supply these materials from IPSC inventories.

Rental of any tools or equipment with a new cost of more than Six Hundred Fifty Dollars ($650) shall be authorized by the Project Coordinator in all cases. The Project Coordinator may often opt to supply the needed tools or equipment from IPSC inventories.

The cost of subcontracted work shall be based on actual subcontractors' invoices. Subcontractors' invoices shall be limited to actual direct costs as outlined above plus a fixed percentage as indicated in the Proposal Section. The subcontractors' percent markup shall be total compensation for the subcontractors' profit, general superintendence, field office expense, overheads, and all other elements of costs not defined as actual direct costs. No work shall be subcontracted by Contractor without the prior written approval of IPSC.

All of Contractor's records concerning subcontractors involved within the Contract shall be subject to audit by IPSC.

c. Final Payment: Before final payment for the Work by IPSC, Contractor shall submit to IPSC, written verification that all subcontractors, vendors, persons, or firms who have furnished labor or materials for the Work have been fully paid and that all taxes have been paid.

The unpaid balance due Contractor at the completion of the Work, adjusted according to any provision of the Contract, will be paid within thirty (30) days after receipt of Contractor's final monthly payment request and IPSC's official acceptance of the Work.

4. Progress Reports: Contractor shall furnish weekly progress reports to the Contract Administrator at the end of each week. The reports shall list the major accomplishments for the week and a list of the items scheduled for the following week. The report shall also update on a percentage basis the major milestones as outlined on the project schedule.

5. Regulations, Permits, Licenses, and Warrants: Contractor shall comply with all applicable federal, state, and local regulations including, but not limited to, Federal and State OSHA, as said regulations relate to the Contract, Contractor's performance, or Contractor's trade. In addition, Contractor shall ensure that all permits, licenses, and

warrants relating to the Contract, Contractor's performance, and Contractor's trade be acquired.

6. Letters to IPSC: All inquiries relating to these Specifications prior to award of Contract shall be addressed to the Buyer.

After award of Contract, all letters pertaining to performance of the Contract (other than invoice) shall be addressed as follows:

President and Chief Operations Officer
Intermountain Power Service Corporation
850 West Brush Wellman Road
Delta, UT 84624-9546

Attention: Mike Nuttall, Contract Administrator

Regarding **Contract No. 03-45590**

7. Contract Duration and Renewal Option: The portion of the Contract governing the construction of the helper cooling tower shall remain in effect until completion of the Work. The Time and Material portion of the Contract shall remain in force for a period of two (2) years from the date of award. Equitable adjustments to the labor and equipment rental rates quoted on pages C3-1 and C5-1 of Division C, Bidding Documents, may occur, at the request of Contractor, and with IPSC approval. Percentage adjustments shall be based upon Contractor's actual costs and shall not exceed the percentage increase implemented by IPSC for IPSC hourly employees effective January 1 of each year. No adjustments shall be allowed within the first twelve (12) months following Contract award.

IPSC shall have the right and option at anytime during the original Contractual Period to renew the Contract for a period of up to one (1) year after date of expiration of the original Contractual Period under the same terms and conditions for such extended or option period.

In the event that the Contract extension option is exercised by IPSC, it will be exercised by the issuance and delivery to Contractor of an order therefore by IPSC. The terms of this Contract executed for the original Contractual Period shall remain in effect for any such extended or option period.

8. Title: The title to all portions of the Work for which IPSC has made payments shall pass to IPA upon such payment, provided, however, that the risk of loss or damage with respect to the Work, including IPSC furnished equipment, of which Contractor has custody, shall be with Contractor until IPSC's official acceptance of the Work. When title to the Work, or portions thereof, passes to IPA, it shall be free of all liens and encumbrances. Passage of title shall not relieve Contractor of any responsibilities under the Contract.

PART F - DIVISION F1

DETAILED SPECIFICATIONS - SPECIAL CONDITIONS

1. General: Under the terms of the Contract, Contractor shall furnish and deliver **Electrical Construction Work** necessary to complete the Work as specified in the Contract Documents.

2. Printed Documents: All printed documents, including drawings and instruction books, if applicable, shall be in the English language. All units of measurement shall be in the English foot-pound-second system.

3. Delivery Arrangements: After award of the Contract and prior to performing any Work, Contractor shall become familiar with the facilities at the IPP Premises set forth in the Proposal Schedule, either by personal inspection or by contacting the Contract Administrator, (435) 864-6442.

4. Indemnity Clause: Contractor undertakes and agrees to indemnify, hold harmless, and at the option of the Intermountain Power Agency, defend Intermountain Power Service Corporation, Los Angeles Department of Water and Power, and any and all of their boards, officers, agents, representatives, employees, assigns, and successors in interest from and against any and all suits and causes of action, claims, charges, costs, damages, demands, expenses (including, but not limited to, reasonable attorneys' fees and cost of litigation), judgments, civil fines and penalties, liabilities or losses of any kind or nature, including, but not limited to, violations of regulatory law, breach of contract, death, bodily injury or personal injury to any person, including Contractor's employees and agents, or damage or destruction to any property of either party hereto, or of third persons, arising in any manner by reason of or incident to the performance of the Contract on the part of Contractor, or Contractor's officers, agents, employees, or subcontractors of any tier, except as may be caused by the sole negligence of IPA, IPSC, LADWP, or their boards, officers, agents, representatives, or employees.

5. Insurance Requirements: Prior to the start of Work, Contractor shall furnish IPSC evidence of coverage from insurers acceptable to IPSC and in a form acceptable to IPSC's Insurance Analyst. Such insurance shall be maintained by Contractor and at Contractor's sole cost and expense.

   Such insurance shall not limit or qualify the liabilities and obligations of Contractor assumed under the Contract. IPA, IPSC, or LADWP shall not, by reason of any of their inclusion under these policies or otherwise, incur liability to the insurance carrier for payment of the premium for these policies.

Any insurance carried by IPA, IPSC, or LADWP which may be applicable is and shall be deemed excess insurance, and Contractor's insurance is and shall be primary for all purposes despite any provision in Contractor's policies to the contrary.

Should any portion of the required insurance be on a "Claims Made" policy, Contractor shall, at the policy expiration date following completion of the Work, provide evidence that the "Claims Made" policy has been renewed or replaced with the same limits and terms and conditions of the expiring policy, or that an extended discovery period has been purchased on the expiring policy at least for the Contract under which the Work was performed.

a. Workers' Compensation/Employer's Liability: Workers' Compensation Insurance covering all of Contractor's employees in accordance with the laws of all states in which the Work is to be performed and including Employer's Liability Insurance, and as appropriate, Broad Form All States Endorsement, Voluntary Compensation, Longshoremen's and Harbor Workers' Compensation, Jones Act, and Outer-Continental Shelf coverages. The limit for Employer's Liability coverage shall be not less than $1 million each accident and shall be a separate policy if not included with Workers' Compensation coverage. Evidence of such insurance shall be an endorsement to the policy providing for a thirty (30) days' prior written notice of cancellation or nonrenewal of a continuous policy to IPSC, by receipted delivery, and a Waiver of Subrogation in favor of IPSC, IPA, and LADWP, its officers, agents, and employees. Workers' Compensation/Employer's Liability exposure may be self-insured provided that IPSC is furnished with a copy of the certificate issued by the state authorizing Contractor to self-insure. Contractor shall notify IPSC, by receipted delivery, as soon as possible of the state withdrawing authority to self-insure.

b. Commercial General Liability: Commercial General Liability with Blanket Contractual Liability, Products and Completed Operations, Broad Form Property Damage, Premises and Operations, Independent Contractors, and Personal Injury coverages included. Such insurance shall provide coverage for total limits actually arranged by Contractor, but not less than $2 million Combined Single Limit and be specific for the Contract. Should the policy have an aggregate limit, such aggregate limits should not be less than $4 million. Umbrella or Excess Liability coverages may be used to supplement primary coverages to meet the required limits. Evidence of such coverages shall be on IPSC's Additional Insured Endorsement Form or on an endorsement to the policy acceptable to IPSC and provide for the following:

(1) To include IPA, IPSC, LADWP, and their officers, agents, and employees as additional insured with the Named Insured for the activities and operations under and in connection with the Contract.

(2) That the insurance is primary and not contributing with any other insurance maintained by IPA, IPSC, or LADWP.

(3) A Severability-of-Interest of Cross-Liability Clause such as: "The policy to which this endorsement is attached shall apply separately to each insured against whom a claim is made or suit is brought, except with respect to the limits of the company's liability."

(4) That the policy shall not be subject to cancellation, change in coverage, reduction of limits, or nonrenewal of a continuous policy, except after written notice to IPSC, by receipted delivery, not less than thirty (30) days prior to the effective date thereof.

(5) A description of the coverages included under the policy.

c. Commercial Automobile Liability: Commercial Automobile Liability covering the use of owned, nonowned, hired, and leased vehicles for total limits actually arranged by Contractor, but not less than $1 million Combined Single Limit. Such insurance shall include Contractual Liability coverage. The method of providing evidence of insurance and requirements for additional insureds, primary insurance, notice of cancellation, and Severability-of-Interest shall be the same as required in the Commercial General Liability Section of these terms and conditions.

d. Other Conditions:

(1) Failure to maintain and provide acceptable evidence of any of the required insurance for the required period of coverage shall constitute a major breach of Contract, upon which IPSC may immediately terminate or suspend the Contract. In addition or in the alternative, IPSC has the right (but no duty), to procure such insurance and (a) to submit a claim for the cost thereof against any Performance Bond supplied by Contractor, (b) to deduct the cost thereof from any monies due Contractor under the Contract or otherwise, and/or (c) to charge and collect the cost thereof from Contractor, payable upon demand. Such claim, deduction, or charge shall include an administrative fee of 2 percent of the cost of procuring said insurance. Said insurance may be procured and maintained in the name of Contractor, IPSC, IPA, LADWP, and/or any combination thereof, as primary and/or secondary insured, all as IPSC may from time to time elect.

(2) Contractor shall be responsible for all subcontractors' compliance with these insurance requirements. The foregoing remedies in subsection (1)

shall be available to IPSC against Contractor for any failure by any subcontractor to maintain and provide the required insurance.

6. Transportation: All shipments of hazardous materials under the Contract or in connection herewith shall be handled in accordance with current U.S. Department of Transportation regulations and all other applicable federal, state, and local laws and regulations.

7. Safety: Contractor agrees, warrants, and represents that (a) it is familiar with the risks of injury associated with the Work and otherwise being on IPSC premises, (b) has reviewed the Work to be performed, (c) has inspected the job site with an IPSC representative, and (d) has determined that no unusual or peculiar risk of harm exists with regard to the Work to be performed at the job site. Contractor further agrees that it shall, at all times, provide at the job site a competent supervisor(s) familiar with IPSC's and the industry's safety standards to ensure compliance with all federal, state, and local regulations pertaining to safety (including, but not limited to, Federal and State OSHA, as said regulations relate to the Work to be performed under the Contract). Although IPSC assumes no responsibility to oversee or supervise the Work, IPSC reserves the right to review safety programs and practices, and to make recommendations to Contractor. No such review or recommendation by IPSC shall impose any liability or responsibility on IPSC, or relieve Contractor from providing a safe working environment and complying with all legal requirements.

   Contractor shall comply with IPSC's safety and equipment requirements prior to starting Work. Worker protective clothing, which includes, but is not limited to, hardhats, safety glasses, safety shoes, gloves, respirators, earplugs, safety harnesses, and face shields shall be provided by Contractor.

   Prior to starting Work, all of Contractor's personnel shall attend a safety orientation taught by a representative of IPSC. At Contractor's option and subject to IPSC approval, a supervisor of Contractor may attend the orientation taught by IPSC, and then present the orientation to the remainder of Contractor's personnel. In that case, a roll shall be provided to IPSC which lists each person who received the orientation and the date it was received.

8. Material Safety Data Sheets: Contractor shall furnish IPSC with a Material Safety Data Sheet (MSDS) for all hazardous materials furnished under the Contract, used, stored, or transported on or near IPA premises in connection with the Contract. The MSDS shall be furnished to IPSC on, or prior to, the date of the first delivery, use, storage, or transportation of the materials or equipment.

If these Specifications require that Contractor furnish instruction books, the Material Safety Data Sheets shall also be included in such books.

9. Contract Termination:

(a) For Convenience or Security: IPSC reserves the right, by giving twenty (20) days' prior written notice (or such longer notice as IPSC may select) to Contractor, to terminate the whole or any part of the Contract at IPSC's convenience, whether or not Contractor is in default. IPSC also reserves the right to terminate the Contract, effective immediately upon notice, for purposes of security or safety of IPP or IPA facilities, persons who work at IPP or IPA facilities, or the public. In the event of termination for convenience, security, or safety, IPA will pay Contractor reasonable and proper termination costs (if, however, Contractor's Proposal includes cancellation charges, payment for termination costs shall not exceed the cancellation charges set forth therein). Contractor shall, after consultation with IPSC, take all reasonable steps to minimize the costs related to termination. Contractor shall provide IPSC with an accounting of costs claimed, including adequate supporting information and documentation and IPSC may, at its expense, audit the claimed costs and supporting information and documentation.

(b) For Breach: IPSC may terminate the Contract, effective immediately upon notice in the event Contractor is in material default, and without right on the part of Contractor to claim any termination costs. This right to terminate is in addition to, and not in lieu of, any other remedy provided in the Contract or otherwise provided by law or equity.

(c) Limitation of Liability: In no event shall termination of the Contract, whether for convenience, security, safety, breach, or otherwise, constitute the basis for or result in any claim for consequential damages (including loss of anticipated profits or other economic damages) or punitive damages, and Contractor hereby releases IPA, IPSC, and LADWP, and their officers, directors, employees, agents, and representatives, from any and all such claims or liability.

10. Suspension of Work: IPSC reserves the right to suspend and reinstate execution of the whole or any part of the Contract and Work without invalidating the provisions of the Contract. In the event Work is suspended, Contractor will be reimbursed for actual direct unavoidable costs that it reasonably incurs as a result of the suspension. Claims for such cost reimbursement shall be submitted by invoice. Contractor shall use all reasonable means to minimize such costs, and shall allow IPSC to audit costs claimed. Contractor shall, upon request by IPSC, provide a projection of costs it anticipates to incur during any suspension, or continuation of suspension, contemplated by IPSC. In no event shall suspension constitute the basis for, or result in, any claim for

consequential damages (including loss of anticipated profits or other economic damages) or punitive damages, and Contractor hereby releases IPA, IPSC, and LADWP, and their officers, directors, employees, agents, and representatives, from any and all such claims or liability.

11. No Waiver: No breach, noncompliance, or other failure to perform (collectively "breach") by Contractor, or any subcontractor, or of any Work shall be deemed waived unless expressly waived in writing by the President and Chief Operations Officer. No waiver of any one breach by IPSC shall be deemed to waive any other prior, concurrent, or subsequent breach. No exercise, failure to exercise, or delay in exercising any particular remedy by IPSC shall be deemed a waiver or preclude IPSC from subsequently invoking that remedy for that breach or any other breach. All remedies granted to IPSC in the Contract, or by law or equity, are cumulative and may be exercised in any combination or order.

12. Construction Utilities: Construction utilities required for prosecution of the Work shall be provided by Contractor without cost to IPSC or IPSC as herein specified:

    a. Telephone Services: Contractor shall provide its own telephone service and other site communication facilities as needed. These communication services shall not interfere with IPSC's communication systems. Installation of these services shall be coordinated with the IPSC Project Coordinator.

    b. Compressed Air: Contractor shall provide all air compressors, fuels, lubricants, hoses, and other apparatus required for supplying compressed air required for Work at the helper cooling tower. Compressed air will be available for Work completed in or near the generation building.

    c. Construction Power: IPSC will furnish construction electrical power at no charge. Use of electrical power for heating will not be permitted except as approved by the Project Coordinator. The construction power for the cooling tower work will consist of a power supply center located within 100 feet of any edge of the cooling tower basin. The power supply center will have both 480/277 three-phase power and 120/240 single-phase power available. Contractor shall supply all necessary wiring, panels, and transformers for distribution of the power to the job site. Contractor shall coordinate all connections to the power supply center with the Project Coordinator to ensure the equipment is de-energized and tagged-out prior to making the connection.

    d. Water: Water for construction use will be furnished by IPSC at no charge. Contractor shall provide all piping, valves, and hoses as required to distribute the water for its use.

Potable water will only be available at the IPSC Administration Building. Contractor shall provide sanitary drinking water facilities for its employees including coolers, ice, disposable cups, and a trash barrel for each water container or cooler. Each cooler shall be emptied, cleaned, and refilled at the start of each day.

e. Sanitary Facilities: Construction personnel will not be allowed to use the permanent plant toilet and washroom facilities. Contractor shall furnish and maintain a system of toilets for its construction workers to use. The toilets shall be emptied and maintained clean as required by state and local requirements.

f. Heat: Contractor shall provide all heating facilities required for completion of its Work and as required to prevent freezing damage to the equipment, including IPSC supplied equipment, while under construction and prior to start-up and initial operation. The method of heating shall be acceptable to the Project Coordinator and shall be provided with adequate safeguards.

g. Trash Collection: IPSC will provide a truck mounted trash receptacle for use by Contractor and will empty the trash container as needed. Contractor shall notify the Contract Administrator when the container needs to be emptied. IPSC may take up to three (3) days after notification to empty the container. Contractor shall supply and maintain all other trash containers necessary to maintain a clean and safe work area. Contractor shall not use these trash receptacles for any hazardous waste.

h. Snow Removal: IPSC will provide snow removal service from all on-site roads, parking areas, and around all permanent and temporary construction facilities. Contractor shall be responsible for snow removal as needed around the construction areas not accessible by truck mounted graders.

i. Site Security and Access: The IGS has an existing fence and security system to restrict access to the site; however, the construction site will not be fenced separate from the rest of the IPP Premises and will, therefore, be accessible by all those approved for site access. It is Contractor's responsibility to protect itself, its equipment, and its tools from theft and vandalism as it deems necessary. IPSC will not be responsible for any theft or damage incurred by Contractor.

Only vehicles owned and insured by Contractor or an approved subcontractor will be allowed inside the plant fence perimeter. All other Contractor employees shall park vehicles outside the fence perimeter at Guard Post #1 located southwest of Unit 2. Contractor shall be responsible for transporting its

employees to and from Guard Post #1 and the job site. **Contractor shall not use the back of trucks for employee transport.**

All Contractor's employees will be given security identification badges by IPSC and those badges shall be displayed each day to allow admittance on IPP Premises. Contractor's employees who do not have security identification badges in their possession, will not be allowed on site unless signed in by the Contract Administrator. All security badges shall be returned to the Security Contractor when the employee terminates their work at this site. All Contractor's vehicles will also receive parking stickers from the Security Contractor allowing entrance on IPP Premises. Temporary badges and parking stickers are available for intermittent Contractor employees and vehicles.

Contractor shall have access on IPP Premises between the hours of 7:00 a.m. to 7:00 p.m., Monday through Friday. Access may be allowed on weekends or at other times with the approval of the Project Coordinator.

13. Receiving, Handling, and Storing: Contractor shall promptly receive, unload, and place into storage or construction all equipment, materials, and supplies needed for completion of the Contract **including IPSC furnished materials and equipment.**

    a. Receiving: Upon arrival on IPP Premises, Contractor shall examine all shipments for shortages, discrepancies, or damage. Contractor shall prepare a receiving report itemizing the material received and submit it to the Project Coordinator.

    b. Handling: Contractor shall be responsible for any damage to equipment and materials while in Contractor's custody until final acceptance of the Work. Contractor shall unload all carriers promptly and shall pay any demurrage incurred. Materials shall be handled with due care to prevent damage or loss.

    c. Storage: All equipment, materials, and supplies not immediately incorporated in the Work shall be placed in storage. Storage areas will be allocated and assigned by the Project Coordinator, and will be in the general area of the Work. The storage areas shall be kept clean and orderly at all times.

    Contractor shall temporarily connect the motor space heaters for the fan motors to a 120-volt source while in storage and construction and until a permanent source is available.

14. Construction Management: Coordination of all field work will be under the direction of IPSC. In the event there are other contractors working on IPP Premises, it will be IPSC's responsibility to coordinate the Work of all contractors and resolve any conflict.

The IPSC Capital Project number is to be referenced on all daily time sheets and invoices that are submitted to IPSC for approval. Contractor shall be responsible for performing the Work in accordance with the dates shown on Contractor-prepared, IPSC-approved schedule.

Contractor shall prepare and submit to IPSC, a daily activities report which shall include a Contractor/Subcontractor Personnel Summary Report. The report shall be broken down into supervision and individual craft classifications. The report shall indicate the total number of personnel, by classification, on the payroll of Contractor and each subcontractor and also the total number of man-hours, by classification, actually expended for the day. The daily activities report shall include the following additional information:

a. List of construction equipment used, when applicable.

b. Areas in which the Work is performed, indicating the type of work and elevations, when practicable.

c. Reference to any change(s).

d. Remarks regarding unusual events, conditions, or circumstances.

15. Field Records: Contractor shall maintain at the job site, up-to-date copies of all drawings, specifications, and other Contract documents and supplementary data, complete with latest revisions thereto. In addition, Contractor shall maintain a continuous record of all field changes and, at the conclusion of the Work, shall incorporate all such changes on the drawings and other engineering data and shall submit two (2) complete copies thereof, to IPSC. Throughout the Work under the Contract, IPSC shall have the right to inspect and/or audit all records related to the Work including the record of field changes.

16. Contractor's Supervision on IPP Premises: Contractor shall provide adequate management, supervisory, and technical personnel at the job site as required to ensure expeditious and competent handling of the Work. Contractor shall be responsible for complete supervision and control of all subcontractors as though they were Contractor's own personnel. Notice to Contractor shall be considered notice to any affected subcontractor.

IPSC shall have the right to require removal from IPP Premises, any of Contractor's employees if, in the judgment of IPSC, such removal is necessary to protect IPSC's interests.

Contractor's supervisory personnel shall coordinate Contractor's and subcontractor's programs for safety and accident prevention, fire protection, security and property protection with like programs developed by IPSC. All of Contractor's supervisory personnel shall be required to attend an IPSC safety orientation meeting before performing any work on site, and again, at least once each year.

Contractor shall be responsible for orientation, training, monitoring, enforcement, and all other aspects of implementation and coordination of safety policies and procedures. Contractor shall provide signed documentation within one (1) week of arriving on IPP Premises or within one (1) week of commencing each job, verifying that all Contractor employees have been fully trained in Contractor and required IPSC safety policies and procedures.

Contractor shall be capable of dispatching to the job site, an individual specializing in and specifically trained as a Safety Coordinator for the purpose of monitoring any required phase or item within Contractor's work scope and enforcement of Contractor's safety procedures, where directed by the Project Coordinator.

17. Subcontracts: It is the intent of these Specifications that Contractor shall perform the majority of the field work with Contractor's own forces and under the management of its own organization. The Work may be subcontracted only by subcontractors who have been approved in writing by the Project Coordinator. Such subcontractors shall not perform work for any other contractor on IPP Premises without the specific approval from the applicable Project Coordinator. All subcontractors shall be directly responsible to Contractor and shall be under Contractor's general supervision. All work performed under subcontracts shall be subject to the same Contract provisions as the Work performed by Contractor's own personnel.

18. Relations With Other Contractors: Contractor shall cooperate with all other contractors who may be performing work in behalf of IPSC and workmen who may be employed by IPSC. Contractor shall conduct its operations to minimize interference with the Work of such contractors or workmen. Contractor shall promptly make good, at Contractor's own expense, any injury or damage that may be sustained by other contractors or employees of IPSC, at Contractor's hands. Any difference or conflict which may arise between Contractor and other contractors, or between Contractor and IPSC's employees, in regard to the Work, shall be resolved through the applicable Project Coordinator.

If any part of Contractor's work is dependent upon the quality and completeness of work performed under another contract, Contractor shall inspect such portion of the other contractor's work and promptly report any defects therein which render such work unsuitable for the proper execution of the Work under the Contract. IPSC will promptly clarify such matters and so inform Contractor. Any work affected by such discoveries,

which is performed by Contractor prior to clarification by IPSC, shall be at Contractor's risk. Failure to report such defects to IPSC shall constitute Contractor's acceptance of such work as suitable to receive Contractor's work, provided however, Contractor shall not be responsible for defects which develop after its inspection and which could not have been reasonably detected or foreseen.

19. Methods of Field Operation: Contractor shall inform IPSC in advance as to Contractor's plans for carrying out each part of the Work. Review by IPSC of any plan or method of work proposed by Contractor shall not be considered as an assumption of any risk or liability by IPSC or any officer, agent, or employee thereof.

20. Lines, Grades, and Elevations: All Work shall be done to lines, grades, and elevations indicated in the Contract Documents. Contractor shall provide suitable equipment and competent workmen who shall lay out the Work. Basic horizontal and vertical control points will be established or designated by IPSC, where required. The points shall be used as datum for Work under the Contract.

Contractor shall provide experienced instrument competent assistants and such instruments, tools, stakes, and other materials required to complete survey, layout, and measurement work. In addition, Contractor shall furnish competent men from its force, and such tools, stakes, and other materials as IPSC may require in establishing or designating control points, in establishing construction easement boundaries, or in checking survey, layout, and measurement Work performed by Contractor.

Contractor shall keep IPSC informed, with reasonable advance notice, of the times and places at which Contractor wishes to do Work, so any checking deemed necessary by IPSC may be done with minimum inconvenience to IPSC and minimum delay to Contractor.

Any work done without being properly located may be ordered removed and replaced at Contractor's expense.

21. Preservation of Monuments and Stakes: Contractor shall carefully preserve all monuments, benchmarks, reference points, and stakes. Any such references shall be removed only with permission from IPSC. References removed without permission from IPSC shall be replaced by Contractor at its own expense.

22. Safety and Accident Prevention: Contractor shall conduct all operations under the Contract in a manner to avoid the risk of bodily harm or a risk of damage to any property. Contractor shall continuously inspect all work, materials, and equipment to discover and determine any unsafe condition and shall be solely responsible for the discovery, determination, and correction of any such condition. This requirement shall apply continuously and shall not be limited to normal working hours.

Prior to start of Work, Contractor shall visit the job site and become familiar with the risks of injury associated with the Work. Contractor shall review the Work to be performed at the job site, with IPSC's representative and shall adequately prepare for any risk of harm with regard to the Work to be performed.

Contractor further agrees that it shall at all times provide at the job site a competent supervisor(s) familiar with IPSC's and the industry's safety standards to ensure compliance with all IPSC, federal, state, and local regulations pertaining to safety, including, but not limited to, Federal and State OSHA, as said regulations relate to the Work to be performed under the Contract. Although IPSC assumes no responsibility to oversee or supervise the Work, IPSC reserves the right to review safety programs and practices and make recommendations to Contractor. Any such review or recommendation by IPSC shall not increase IPSC's liability or responsibility and shall not relieve Contractor from providing a safe work environment and complying with legal requirements and Contractor's safety procedures and programs.

Prior to mobilizing to IPP Premises, Contractor shall prepare and submit a complete safety plan to IPSC for review. The plan shall include a detailed description of all measures to be taken to ensure the safety of all personnel at the job site with regard to the Contract work, including, but not limited to:

a. Emergency procedures.

b. Respirator training.

c. Right to know or hazardous communication.

d. Scaffold certification program.

e. Confined space.

f. Drug testing policy.

Review of Contractor's safety plan by IPSC does not relieve Contractor of any responsibility in fully implementing the safety plan or seeing that proper safety procedures are employed in completing the Contract Work.

IPSC will monitor Contractor's safety measures while performing the Work and may require changes in Contractor's safety and accident prevention program during performance of the Work. These IPSC safety requirements may be more stringent than requirements of the applicable codes or regulations.

Contractor shall maintain accurate accident and injury reports and shall furnish IPSC a weekly summary of injuries and contributing circumstances.

Contractor shall provide, as part of labor overhead, all required safety equipment and enforce the use of such equipment by all of Contractor's and subcontractor's employees, including, but not limited to, all safety-related testing, training, safety monitoring equipment, and personal protective devices.

23. Security and Property Protection: Contractor shall be accountable for any damages resulting from Contractor's operations. Contractor shall be fully responsible for the protection of all persons including members of the public, employees of other contractors or subcontractors, employees of IPSC, and all public and private property including structures, sewers, and utilities, above and below ground.

Within three (3) days after discovering damage or being notified of any damage, loss, or injury resulting from Contractor's operations, Contractor shall make a full and complete report thereof in writing to IPSC.

Contractor shall utilize and maintain all necessary safety equipment including barriers, signs, warning lights, and guards, to provide adequate protection of persons and property.

Contractor shall give reasonable notice to the owners of public or private property and utilities when such property and utilities are liable to injury or damage through the performance of the Work. Contractor shall make all necessary arrangements with such owners relative to the removal and replacement or protection of such property or utilities.

Contractor shall be responsible for all damage to streets, roads, highways, shoulders, ditches, embankments, culverts, bridges, and other public or private property, regardless of location or character, which may be caused by transporting equipment, materials, or men to or from the Work or any part or site thereof, whether by Contractor or subcontractors. Contractor shall make satisfactory and acceptable arrangements with the owner of, or the agency or authority having jurisdiction over, the damaged property concerning its repair or replacement, or payment of costs incurred in connection with the damage.

Contractor shall be responsible for all materials and equipment in its custody or utilized in construction. Security methods shall be employed as required to ensure the protection of all materials, equipment, and tools from theft, vandalism, fire, and all other damage and loss.

Visitors' passes and badges shall be obtained from the appropriate IPSC Security Services representative. Contractor shall also be responsible for identifying visitors, their conduct while on the job site, and the return of the visitors' passes and badges.

For security reasons, all Contractor employees, visitors, subcontractors, representatives, and agents shall be required to display on their hardhats: Contractor's name and employee's name.

The number of Contractor-owned vehicles allowed on site will depend upon the Work in progress and shall be as approved by IPSC. The use of the on-site parking areas for all persons and delivery vehicles entering or leaving the job site will be as designated by IPSC. Use of parking space(s) other than as designated will be subject to appropriate action by IPSC.

IPSC will also have the unqualified right to require inspection of all hand-carried containers, and identification and inspection of all vehicles entering or leaving the IPP Premises.

24. Emergency Protection: Whenever Contractor has not taken sufficient precautions for the safety of the public or the protection of the Work under the Contract or of the adjacent structures or property and whenever an emergency has arisen and immediate action is considered necessary, then IPSC, with or without notice to Contractor, may provide suitable protection by causing work to be done and material to be furnished and placed. The cost of such work and material shall be borne by Contractor and if the same is not paid on presentation of the bills therefore, such costs may be deducted from any amounts due or to become due Contractor. The performance of such emergency work shall not relieve Contractor of responsibility for any damage which may occur.

In the event of any emergency, which IPSC determines endangers life or property, such work shall be performed by Contractor on oral orders from IPSC and confirmed in writing as soon as practicable. In the event of ordered emergency work, Contractor shall keep accurate records of actual costs for review by IPSC.

25. Qualifications of Workmen: Contractor shall employ only workmen who are competent to perform the Work assigned to them and, in the case of skilled labor, who are adequately trained and experienced in their respective trades and do satisfactory work.

26. Sunday, Holiday, and Night Work: No Work shall be done between 6:00 p.m. and 7:00 a.m., on Sundays or on legal holidays without the written consent of IPSC. All Work schedules for Contractor's site personnel shall be approved by the Project Coordinator.

27. Unfavorable Conditions: During periods of unfavorable weather, wet grounds, or other unsuitable conditions, Contractor shall confine operations to work which will not be

affected adversely thereby. No portion of the Work shall be completed under conditions which would affect adversely the quality thereof, unless special means or precautions acceptable to IPSC are taken by Contractor to perform the Work in a proper and satisfactory manner.

28. Fire Protection: Contractor shall comply with IPSC's procedures regarding fire protection. Supplementing these requirements, Contractor shall use only work procedures which minimize fire hazards to the extent practicable. Combustible debris and waste materials shall be collected and removed from the job site each day. Fuels, solvents, and other volatile or flammable materials shall be stored away from the Work and storage areas in well-marked, safe containers. Good housekeeping is essential to fire prevention and shall be practiced by Contractor throughout the course of the Work.

Scaffolding, planking, and similar materials which are combustible, but which are essential to execution of the Work, shall be treated for fire resistance. Fire-retardant treated lumber shall be UL listed or Factory Mutual approved and consideration shall be given to the leachability of the treatment. Where combustible materials must be utilized within an area where ignition sources exist, Contractor shall dampen such materials or take further steps, at the commencement and conclusion of Work each morning and afternoon, to ensure that possible ignition sources are quenched or isolated.

Temporary heating facilities shall be approved by the Project Coordinator prior to use and shall not be left unattended.

Contractor shall provide adequate fire protection equipment in the temporary structures Contractor is occupying in accordance with NFPA 241 and as specified herein. Access to sources of fire water shall be identified and kept open at all times. Suitable fire extinguishers shall be provided in enclosed areas, in areas which are not accessible to fire water, or in areas which may be exposed to fire that cannot be safely extinguished with water.

Each fire extinguisher shall be of a type suitable for extinguishing fires which might occur in the area in which it is located. In areas where more than one type of fire might occur, the type of fire extinguisher required in each case shall be provided. Each extinguisher shall be placed in a convenient, clearly-identified location that would offer the greatest opportunity for accessibility in the event of fire.

Contractor alone shall be responsible for providing adequate fire protection. Failure of Contractor to comply with, or IPSC to enforce, the above requirements shall not relieve Contractor from any other responsibility or obligation under the Contract.

29. Work Area Limits: The Project Coordinator will designate the boundary limits of access roads, parking areas, storage areas, and work areas and Contractor shall not trespass

in or on areas not so designated. Contractor shall be responsible for keeping all of its personnel out of areas not designated for Contractor's use; except, in the case of isolated work located within such areas, IPSC will issue permits to specific Contractor personnel to enter and do the Work.

30. Food Services: No Contractor-arranged food services will be permitted on IPP Premises.

31. Protection of Work: Contractor shall be solely responsible for the protection of its Work until official acceptance by IPSC. Contractor shall have no claim against IPSC or its employees because of any damage or loss to Contractor's Work and shall be responsible for the complete restoration of damaged Work to its original condition complying with these Specifications and as directed by IPSC.

If a conflict or disagreement develops between Contractor and any other contractors concerning the responsibility for damage or loss to Contractor's Work, the conflict shall be resolved as provided under Article 18 of this Division, Relations With Other Contractors. Such conflict shall not be cause for delay in the restoration of the damaged Work. Contractor shall restore the Work immediately and the cost thereof will be assigned pending the resolution of the conflict.

32. Protection of Concrete and Other Finished Surfaces: Finished surfaces, including concrete, shall be protected from chipping, gouging, scratching, staining, and other damage. Damaged sections shall be repaired or removed and replaced subject to IPSC's discretion and acceptance. Heavy planks and mats shall be placed under equipment and materials being stored, moved, assembled, or installed on or above floor surfaces. Nonflammable, oil-resistant coverings shall be used to protect surfaces from staining.

33. Protection of Grating and Stair Treads: Floor gratings and stair treads shall be protected against damage from heavy loads, movement of equipment, materials, flame-cutting, welding, and other such construction activities. Where heavy equipment or material loads are to be stored or moved over gratings, such loads shall be supported directly from the structural steel and shall not be allowed to bear on the gratings. Damaged sections shall be repaired or replaced subject to IPSC's discretion and acceptance.

34. Protection of Electrical Raceway, Cable, and Lighting Fixture: Contractor shall protect electrical raceway, cable, lighting fixtures, and associated support systems against damage from movement of equipment and materials, welding, flame-cutting, and other work activities. Raceway and supporting structures for raceway and lighting fixtures shall not be used as access scaffolding at any time. Whenever welding or flame-cutting operations occur above or near raceways, cables, or lighting fixtures not shielded from

such operations by concrete floors or other protective covers, Contractor shall protect the raceways, cables, and lighting fixtures from damage by means of fireproof boards or blankets.

35. Repair of Damages: Contractor shall immediately repair any damage which results from Contractor's Work activities or abnormal use, including damage done to the existing facilities. All such repair work must be acceptable to IPSC.

36. Independent Testing Laboratory: Except as otherwise specified, laboratory testing specified in the technical requirements will be done by an independent testing laboratory retained by IPSC. All costs for such laboratory services will be paid by IPSC unless otherwise specified within the applicable Scope of Work.

37. Oil Spill Prevention and Control: Contractor shall be solely responsible for its operations involving unloading, storing, handling, and using oil and oil by-products on IPP Premises and shall be solely responsible for strict compliance with the requirements of the Environmental Protection Agency (EPA) as published in the Code of Federal Regulations (CFR) Title 40, specifically Articles 110 and 112.

Contractor shall unload and store oil and oil by-products at the location designated by IPSC. In the event of an oil spill, Contractor shall furnish all material, labor, and equipment required to expedite the cleanup work in compliance with IPSC's Oil Spill Prevention, Control, and Countermeasure Plan PAI #101 (See Attachment #3) and the requirements of Title 40 of the CFR.

38. Scaffolding: Contractor shall furnish all scaffolding, staging, ladders, flooring, runways, and any other temporary construction required for the execution of its Work. Contractor shall construct scaffold using only personnel trained and certified in the proper construction and inspection of scaffolding.

All scaffolding shall be subject to approval by IPSC and shall meet or exceed IPSC standards and OSHA design standards for safety and adequacy.

All scaffolding, runways, and other temporary construction shall be self-supporting throughout and shall be rigidly built so as to support safely the weight of all materials, apparatus, equipment, and personnel to be placed thereon as required by federal, state, and local laws.

39. Inspection of Field Work: All material delivered and Work performed shall be subject to inspection by IPSC. Such inspection shall not relieve Contractor of the responsibility of furnishing high-quality labor and materials in strict accordance with the Contract Documents. Any materials or field Work accepted and later found to be defective shall be replaced without cost to IPSC. Contractor shall perform its own thorough inspection

and after it is satisfied it has met all requirements of the Contract Documents, shall request IPSC's acceptance.

Contractor shall keep IPSC informed of the progress of the Work and shall allow IPSC not less than two (2) days notice in advance of appropriate times for inspections and tests unless specifically arranged otherwise, in advance, with IPSC. Contractor shall furnish IPSC reasonable facilities, samples, and proper authority for access for inspection and tests and for obtaining such information as IPSC may require.

When specific inspections are required hereunder, Contractor shall not proceed beyond that point until IPSC has made the inspection and given approval. No such inspection shall be waived except by written permission from IPSC.

40. Explosives: Explosives, including explosive-actuated tools, shall be used only with approval of the assigned Project Coordinator.

41. Hazardous Materials: Contractor shall furnish a MSDS for all hazardous materials furnished under the Contract. The MSDS shall be furnished to IPSC on, or prior to, the date of the first delivery of the materials or equipment.

If the specifications require that Contractor furnish instruction books, the MSDSs shall also be included in such books.

All hazardous materials under the Contract shall be handled in accordance with IPSC's administrative directive PAI# 106 and PAI #144, (See Attachment #3) and current U.S. Department of Transportation regulations.

Hazardous materials purchased by Contractor for use at IGS, as a consequence of working for IPSC, shall require approval by the Project Coordinator. Contractor shall submit to the Project Coordinator a detailed listing of materials to be used for the Work and the applicable MSDSs prior to the use of the materials. No hazardous material shall be used by Contractor at IGS unless it has been approved by the Project Coordinator. Similarly, Contractor must:

a. Train all potentially exposed personnel on the MSDS and hazardous material used on the job site and in the vicinity.

b. Provide protective equipment to potentially exposed personnel.

c. Provide proper management, transportation, and disposal of all hazardous materials and/or wastes as specified by the Utah Bureau of Solid and Hazardous Wastes and EPA, Region VIII.

NOTE: BEFORE BRINGING HAZARDOUS MATERIALS ON SITE SEE PROJECT COORDINATOR!

PART F - DIVISION F2

DETAILED REQUIREMENTS FOR HELPER COOLING TOWER

1. General: The IGS consists of two (2) coal fired generating units with each having a maximum gross capacity of 875 Megawatts. IGS is operated and maintained by IPSC. IPSC is currently involved in a project to increase the capacity of both units to 950 Megawatts Gross. This will be achieved by replacing the High-Pressure Section of the turbine with a new design, increasing heat rejection capacity and through various other improvement projects.

   The heat rejection capacity will be increased by the addition of one (1) helper cooling tower per unit. The helper cooling tower will take circulating water from the existing piping and return the water back to one (1) of the cooling tower basins for each unit.

2. Scope of Work: Contractor shall supply all necessary materials, supervision, labor, equipment, vehicles, supplies, services, tools, or other similar items as required for electrical construction of two (2) fiberglass cooling towers except as specified in Article 3 of this Division.

   The Work shall include, but not be limited to, the following tasks:

   a. Install transformers, busduct, switchgear, and all other equipment in or near the electrical building.

   b. Install all control, vibration, and Modicon cabinets in the electrical building.

   c. Install all instruments and control devices.

   d. Install the heating and ventilating equipment in the electrical building.

   e. Install all lighting fixtures and light poles.

   f. Install all necessary raceway and wiring on the tower, in the electrical building, and between the electrical building and the cooling towers.

   g. Install the wiring from the electrical building to the existing generating unit.

   h. Install the concrete curbs in the electrical building for the electrical equipment.

   i. Install all wiring, raceway, and electrical equipment for the fire protection system.

   j. Install the internal wiring for the vibration cabinets.

   k. Install the wiring within the generating station for the helper cooling tower.

l. Labeling raceway, cables, and wires.

m. All other work as necessary for complete and operating cooling towers.

3. Work by Others: The following work will be completed by others:

a. Erection of the cooling tower.

b. Erection of the above ground fire protection system.

c. Installation of light pole foundations.

d. Erection of the electrical building.

4. Materials and Services: Unless specified otherwise, Contractor shall supply all materials and services necessary for completion of the Work. This includes, but is not limited to, the following:

a. Raceway, supports, and fittings.

b. Junction boxes and pull boxes.

c. Cable, wiring, thermocouple wire, and terminations.

d. Light fixtures, lamps, switches, standards, and supports.

e. Miscellaneous fasteners and sealants.

f. Lighting and power panels.

g. Convenience and welding outlets.

h. Lightning protection rods and wiring.

i. Power roof ventilator motor starters and switches.

j. Concrete for equipment curbs and grouts.

f. All other material not specifically mentioned as being supplied by IPSC or others.

5. Materials Supplied by IPSC: The following materials will be supplied by IPSC.

a. Fiberglass cooling tower complete with fasteners, anchor bolts, caulking, fire protection system, and sealants.

b. Fan motors.

c. Switchgear and transformer.

d. Motor braking cabinets.

e. Control cabinets.

f. Process control devices including, ultrasonic flow meters, vibration monitoring equipment with wiring between the probes and cabinets, oil level detectors, and thermocouples.

g. Ventilation equipment for the electrical room.

h. Light poles.

i. Both control and power wiring between the existing facilities and the helper cooling tower electrical building.

j. Smoke detectors and fire panels.

6. Materials Supplied by Others:

a. Underground bus duct.

b. Fire protection equipment.

7. Schedule: Time is of the essence and failure to have both helper cooling towers available for service by May 1, 2003, will result in significant monetary loss to IPP. An estimated Construction Schedule for the helper cooling towers is attached for review by Contractor. Contractor shall develop its own schedule and submit it with the bid which will become part of the Contract Documents.

8. Technical Requirements: The attached CEntry specifications in Attachment #2 shall apply to the Work on the helper cooling tower. The Black & Veatch specifications in Attachment #2 shall apply to the Time and Material work covered under Division F3.

PART F - DIVISION F3

DETAILED REQUIREMENTS FOR TIME AND MATERIAL WORK

1. General: In addition to the electrical work for the helper cooling tower, IPSC may require additional help completing various electrical projects. Most of these projects need to be completed before or during the Spring Outages on both units. Unit 2 will have an 8-day outage beginning February 8, 2003 and Unit 1 will have a 30-day outage beginning March 1, 2003. Since the total scope of the additional work is not completely defined, this work will be completed on a Time and Material Basis.

2. Scope of Work: Contractor shall supply all necessary materials, supervision, labor, equipment, vehicles, supplies, services, tools, or other similar items as specified by the Project Coordinator or as specified herein. The projects IPSC expects to complete using the Contract are as follows:

   a. Install the wiring and conduit for a new ash water make-up valve.

   b. Complete wiring and conduit for new boiler feed pump torque meters.

   c. Install and connect new primary air flow instrumentation devices.

   d. Install wiring required for installing new control dampers on the boiler.

   e. Start-up testing for the new helper cooling tower.

3. Certified Welder: The Work on the iso-phase bus duct requires a certified welder. Contractor shall include a wage sheet for a welder qualified to weld using the attached procedure (Attachment #2, Delta-Unibus Weld Procedure).

4. Technical Requirements: The Black & Veatch specifications in Attachment #2 shall serve as a general guide for the Work under this Division of the Contract. The actual materials and processes used for each individual job will be specified by the individual Project Coordinator.

ATTACHMENT #6
GSL Bid Review Meeting
Intermountain Generating Station
Conference Room 1
January 27, 2003

Attendees: Hyrum Loscher
Craig Mullen
Ralph Allen
Mike Nuttall (Contract Administrator)
Jon Christensen (Electrical Design Engineer)
Jerry Finlinson (Controls Engineer)
Jerry Hintze (Total Project Administrator)
Pat Finlinson (IPSC Risk Analyst)

1. Purpose of Meeting:

   IPSC is still evaluating the bids looking for the low bidder. GSL's bid looks good, but we want to make sure there is a good understanding of what is expected, make sure everything is covered, make sure there aren't any areas missed, and that the work goes smoothly.

   Jerry Hintze is the total project coordinator. He wanted minutes to be part of the contract.

2. Discussion of Exceptions in Bid:

   1. **We have not included for the supply of bonds or for builders risk insurance in our bid price. We have assumed that the owner will provide builders risk insurance coverage and that the terms and deductibles will be acceptable to GSL, and that GSL will be listed as coinsured with a waiver of subrogation against GSL.**

      GSL will provide the required bonds - the $50,000 bond that is talked about in the contract is included in the bid.

      Basically all GSL is concerned about is that we are insured to cover any damages caused by other parties to their equipment.

      GSL is not taking exception to the insurance requirements required in the specification.

      Pat Finlinson explained to them that we are self-insured through LADWP with a huge policy. Endorsement forms are required with this large amounts. GSL has no problem with the other requirements.

   2. **We have not included sales and use tax for materials purchased for this project.**

      No problems - looks reasonable.

3. **Our bid price is valid for ninety days.**

   No problems - looks reasonable.

4. **All permits will be paid for by others.**

   No problems - looks reasonable.

5. **Our bid price is based on a 3-month schedule, working 50 hours per week.**

   Based on equipment delivery we (IPSC) may not be able to start on the work as early as we want to. MCC's, etc., will not be here until the end of March. GSL stated that they can modify their schedule to fit those delivery dates. They thought they could get that work done early, but if they can have the schedule of when the equipment will be here, they can work around the equipment delivery. If they can address these issues before starting work, they can schedule the manpower accordingly. IPSC will get them a list of when these things will be available.

   May 1 was the scheduled completion date, but we may have to modify that date.

   Ten weeks was the original time frame but that is not feasible at this point. GSL is ready to start on the 17th of February. If they can start working and proceed to get it done within their basic time frame, it won't be an issue. They just want to get started and get the work done.

6. **There is no excavation included in our bid price.**

   GSL gave Mike a breakdown of what the price would be to provide the work for the site lighting. This price was based on no asphalt work being required and includes excavation.

   All underground conduit is now installed, stub-outs are in place and grounding is done. Excavation is not required for any of these items.

7. **All lighting, that is part of cooling towers 1 and 2 as well as the electrical building, is included in our price. We have not included any site lighting pole bases, poles or fixtures in our price. No site lighting is shown on the drawings.**

   The site lighting was covered in the breakdown referenced in item 6. Site lighting has been added. The cost breakdown included underground conduit for the cable. It was identified that the cable that is supplied for the site lighting comes in a conduit. No additional conduit is needed. GSL will supply a new price with the conduit removed.

   The price breakdown also included the purchase of the fixtures, pole installation and wiring of the poles. IPSC will supply the light poles for the site lighting.

(8) **We have included the installation of power wiring for the heating and ventilating equipment in the electrical building. Installation of this equipment is not included in our bid price.**

GSL has reviewed it and they feel they have estimated a sufficient amount for installation of the HVAC equipment. Ventilating equipment will be mounted. Duct will be there and GSL will need to do the flashing, etc. The following HVAC equipment will need to be mounted: three PRVs mounted on roof, 2 louvers mounted in the walls, three oil unit heaters mounted in the building, and a thermostat. A control cabinet for the PRVs and the louvers including a terminal block and relay that is shown on the drawing is also required. GSL stated that their bid included enough to cover this work.

Note: An inspection after the meeting indicated that the PRV's have already been mounted. (Jerry Finlinson)

(9) **We have included the installation, but not the supply, of the main isobar bus into the electrical building and the 2000 AMP tie bus shown on drawing D-01239-E001.**

Non-segregated bus is being used, not isophase bus. Jon has included bus supports. GSL will need to install the supports. There will be one or two outside and one or two inside. The manufacturer is saying "the transformer cannot be used as a support for the bus." Jon is still discussing final drawings with the transformer manufacturer. IPSC will supply the supports, and if there is a base needed, we will do a change order. Stressed concrete building - it is really quite critical to do them according to the drawing. GSL stated that they had accounted for installation of the supports in their bid.

(10) **We have included in our bid price the instillation of conduit, wire, devices and panel for the Fire Alarm System shown on the Electrical Building drawings. Supply of smoke detectors, pull stations and Fire Alarm Panel will be by others. No other Fire Alarm equipment or labor is included in this bid. We have not included the commissioning of the Fire Alarm System.**

There was one item found missing in the drawings, and will try to identify it through correspondence. In the electrical building in the fire protection room on the west side of the building, there are some pressure switches and tampers associated with the fire protection system. They will need to be wired with conduit from the other side of the room, but it is included in the bid requirements. GSL knows where they need to go, and they have no concerns.

(11) **We have included the following panels in or bid price: 1APA-PPL-123, 2APA-PPL-123, 1APC-PPL-134, 2APC-PPL-134, T-1APA-PPL-123, T-2APA-PPL-123 and LTC-1. The supply of all other transformers, switch gear, MCC's, VFD's and control panels will be by others complete with all internal wiring installed and shop tested.**

IPSC asked if it would be a problem if the names on the equipment end up being different from what was shown in the bid documents. GSL said it will not impact the bid if some of these names are different. This will only be a problem after they have

ordered the tags. IPSC asked if the PRV motor starters and the PRV control panel was included in the bid. GSL answered that it was included in the bid price. IPSC is going to use the time and materials contractor to do some internal wiring in the switchgear. The vibration panels are currently stored in the warehouse and will be given to GSL for the internal wiring.

(12) We have only allowed for the supply/installation of the cable/conduit shown both on the cable/conduit schedule and on the layout drawings.

From discussion the other day - if we missed a circuit or raceway on one of the drawings but if it's included in the circuit and raceway list or shown on the drawing but not in the circuit and raceway list, GSL stated that it was included in their bid. GSL will take out the word "both" and put in "and/or on the layout drawings" in place of "and on the layout drawings." This change will take care of the concerns.

(13) We have not included tray covers in our bid price.

GSL did not include going through fire walls in their bid. There are no tray covers required. There are two fire walls in the towers that the raceway will need to penetrate. These firewalls are a Cement board and penetrations will need to be cut for the raceway, then sealed. GSL knows how to do this. They do this kind of work all the time. They have used other products that are good. It is not on the drawings, but GSL will sit down and go through all this information and add it to the bid price.

(14) All cables passing through junction or pull boxes are assumed to continue on as the same size and type. We have not included for combining smaller cables in junction boxes into larger multiconductor cables. By utilizing trunkline cables, from the junction boxes back to the electrical room, cost savings could be realized.

We don't have any problems with this. The fewer the breaks (in the cable) the better.

(15) The supply of all PLC equipment w/the associated control panels, specialty cables, software and the required programming will be by others.

It will all be done by IPSC.

(16) The relay coordination study and all relay calibration will be by others. We have only included for setting the relays to the required trip settings.

IPSC will be doing that.

(17) All instruments, control devices, valves and manifolds with their associated support and mounting hardware will be supplied by others, with the exception of the Drop Switch mounting which we have included in our price.

Droop Switch - when we go through and talk about the actual equipment - we need to get an idea of how the mounting will be and make adjustments from there.

(18) All inline instruments and valves, including process connections, will be installed by the mechanical contractor.

GSL defined inline instruments as those installed inside a pipe or internal. None of the instruments being installed are inline.

(19) No allowance has been made for heat trace and instrument heat packs or for the associated wiring in our bid price.

Good.

(20) All cable tray is grounded with a continuous #4/0 SDBC cable.

That seems reasonable. How will that be done, will it be bolted? Yes it is bolted. IPSC normally installs the grounding cable on the outside of the trays. Jon doesn't want to take up the space in the tray with cable. GSL stated that grounding on the outside of the tray is not a problem.

(21) We have allowed 100 hours per site in our bid price, for start-up and commissioning. We have allowed for all meggering and continuity/point-to-point testing in our base bid pricing.

This is fine with IPSC. GSL included for 100 hours of start up testing and if it takes more we can include it in the time and materials. The factory representative will be responsible for inspecting and testing their equipment. We will use a separate contractor to do the actual hypotential testing. GSL will be expected to do preliminary.

3. Discussion of Scope of Work in Division F2 (Helper Cooling Towers)

    1. General

    2. Scope of Work . . . this is the main work we are looking at.

        a. From our discussions, IPSC and GSL are thinking along the same lines on this and we should be okay.

        b. IPSC intended for GSL to mount control, vibration, and Modicon cabinets in the electrical building. GSL understands that.

        c. GSL went through the list and looked at everything. Everything is addressed on this drawing. They are fine with this.

            Jerry Finlinson brought up some changes. The ultrasonic flow meters have two sensors that mount at different locations. The cables from the main transmitter will be run in conduit to a junction box and then split out and run in conduit to each detector. Per Jerry Hintze, install the detectors using conduit and leave it on the rail. If there is a change later, we will have to do a change order. GSL was planning to

have those on the rail. The flow meters use pre-fab cable. GSL will have to provide the necessary conduit.

IPSC has asked GSL to work up a new price and let us know how much increase there will be in their bid price based on the clarifications discussed in the minutes.

The instruments are inside the building - gravity discharge, no level elements in the tower.

Jerry Finlinson showed a new drawing of where to put the flow meter boxes. These indicated that the flow meters need to be mounted near ground level. This was shown to clarify the setup to GSL. He also showed some other drawings he has be working on to make them clearer.

The droop switches on existing ceramic cooling towers have a trip arm inside the stack. The droop switches on the new towers will have a similar installation. IPSC will buy all the parts and GSL will need to assemble and mount them. Jerry Finlinson is making up a drawing showing the way to mount them. GSL stated they would assemble and mount them according to the drawing.

There are two vibration probes mounted on each of the gear boxes. IPSC will provide a housing to mount the probes on. The cable has been ordered by IPSC and will be provided for these vibration probes. Each of these will be a continuous cable run. GSL is okay with this. This work is what they were anticipating.

Oil level - the level switch is not mounted in the fan stack. A pipe is run outside the stack and the level switch is connected to this pipe. There is also an oil temperature switch that needs to be wired in.

d. OK

e. GSL will remove the underground PVC conduit that was added for the site lighting and revise the cost.

f. IPSC asked what wire GSL was planning on supplying. GSL was purchasing cable from Anixter. Jon had seen what Anixter was supplying and stated that it will be the right material. Wire labeling is very important to IPSC. GSL has included for labeling. It will be a plastic tag with a really long number on it. On the high voltage wire, they have included the cost for termination.

Cables in the cable trays will be tied down. Jon just wants to make sure that tie wraps are used across every joint. The existing trays inside the generating units will have a fire sensor cable in many of them that serpentines across the top of the cables. These are heat sensitive and care must be taken that these are not broken. Jostling these around will not set it off, it's heat sensitive. If it is broken, it will activate. Be aware it is in many of the trays. It will need to be moved out of the way and then put back in place.

Jon distributed pictures of the walkway in the tunnel to show where they will be pulling some of the circuits. This would include the 15KV cable with a ground. This will be a single pull through the man holes with absolutely no splices!! GSL stated that typically they would find a center point to pull from to reduce the tension. The distances may change slightly, and Jon would like a per-foot price for differences.

g. Housekeeping pad below the equipment - There needs to be a 6 inch pad under all the floor mounted equipment in the electrical building. It should extend out 6 inches beyond the equipment and have a camfered edge. The housekeeping pad for the switchgear should extend across between the Unit 1 and Unit 2 switchgear. There should be a ramp from this section to the end of the MCC's . GSL will review the work and make sure that this work is included. GSL will sub this work to Weyher. Include painting a yellow safety stripe around that step.

i. Pressure and tamper seals will be mounted side by side and wire to the fire alarm panel. These were not shown on the original drawings and need to be included. The fire detectors are shown on one of the drawings. There is no electrical work on the fire protection located at the towers. All electrical for the fire protection is located in the electrical building.

There are pressure switches for the water/air system. IPSC is getting more details from Fire Engineering on the exact locations. These are in the fire protection room and need to be included.

There are four smoke detectors on the ceiling that come over to the wall. All circuits should be listed. GSL stated that work has been included.

j. GSL has included this work in their bid. They aren't exactly sure what all that needs to be done, but have included money for the work. Basically installing all internal wiring in the cabinets. This is typical of a Bently Nevada design drawings. Cabinets have a glass door on the front. GSL stated that they based their figures on the drawings.

NOTE: GSL doesn't mind if the isophase part goes to someone else.

k. IPSC had sent out a spreadsheet with additional information on these circuits. The estimated lengths were included since there were no drawings showing the actual lengths. These cable pulls will be between cabinets located in the control building. Most of these will be 100 feet or less. The entrance in each cabinet will be sealed. This seal will have to be broken, cable run through, and then resealed.

GSL did not anticipate that but they will review it and redo the pricing. There are several places where they will have to deal with it. You will basically have to cut through, run the cable, and seal it back up. Basically one penetration for each cabinet.

On the fan motors, Jon had intended to have the space heater junction box mounted on the opposite side of the motor from the main junction box. The motor

manufacturer installed the space heater wiring in the main junction box. This will require a different connection for the conduit. GSL stated that this should not be a problem with the bid.

l. GSL is okay with the labeling on the wires. The conduit labeling will be the same. Also, tags on the cable tray. As long as there are nice, clear markings on each section of cable tray there won't be a problem. GSL will do whatever matches our standards.

(4) There are some exceptions that have already been identified. UL master certifications on the lightening rod. Mike will check with Jon. GSL has that covered.

(5) This has already been discussed in the other sections.

4. Discussion of Scope of Work in Division F3 (Time and Material):

Work by others - poles to be purchased by IPSC but they will need to be installed and all the wiring done by GSL.

Safety and Training items - GSL has a very comprehensive safety program. IPSC will need a copy of the confined space, respiratory, and overall safety plan. GSL will give a copy of our plan to their safety guy to make sure they are in line with us.

We have a different tagging system than they are used to. The IPSC program requires tagging and does not recognize locks. If the tagging has been removed, IPSC will cut of any locks that are left in place.

OSHA and MSHA are different in their tagging procedures. We are very careful with our tagging. Tags are very sacred to us. If there's a tag on it, it cannot be operated.

5. Discussion of material specified by Bidder
Cable, Wire, Transformers, Power Panels

Transformers slated for use should be GE, but GSL will let us know for sure.

Jerry Finlinson stated that IPSC was expecting that for the transformer and power panels, the transformer should be on the floor and the power panel mounted above on a support that extends the panel out in front of the transformer. GSL had planned on that already.

GSL is not experienced in the isophase bus duct work. They would not mind if we subbed it out.

GSL has approximately 450 people on their staff. They would not have a problem staffing us for this outage. No other major work will be going on that would interfere with our outage.

GSL did the electrical work on the LDS Conference Center with no problems. They've been around for a long time. They feel like they can be good team players. They have an ongoing service contract with places that they've done work for.

This has been a fairly fast track contract, so there are some issues that need to be addressed before awarding a contract. IPSC has not contracted out electrical work before, so this will be watched closely to see how well it works.

GSL will redo their clarification list, then they will be part of the contract along with the minutes from this meeting.

6. Discussion of Schedule

7. Discussion of Payment Schedule

   John Larsen referred to the payment schedule, Section E, in the Additional General Conditions, next to last paragraph. This clearly indicates that invoices are to be submitted to that address. They are not to be sent to anybody else. They go to Accounts Payable with the contract number referenced, if you are the successful bidder. Invoice monthly or bill jobs during the time and materials portion, specifically describing what is being billed.

8. Discussion of Insurance Requirements

   Risk Manager, Pat Finlinson, will be looking for specific items in the insurance. GSL has no problems or questions concerning the requirements.

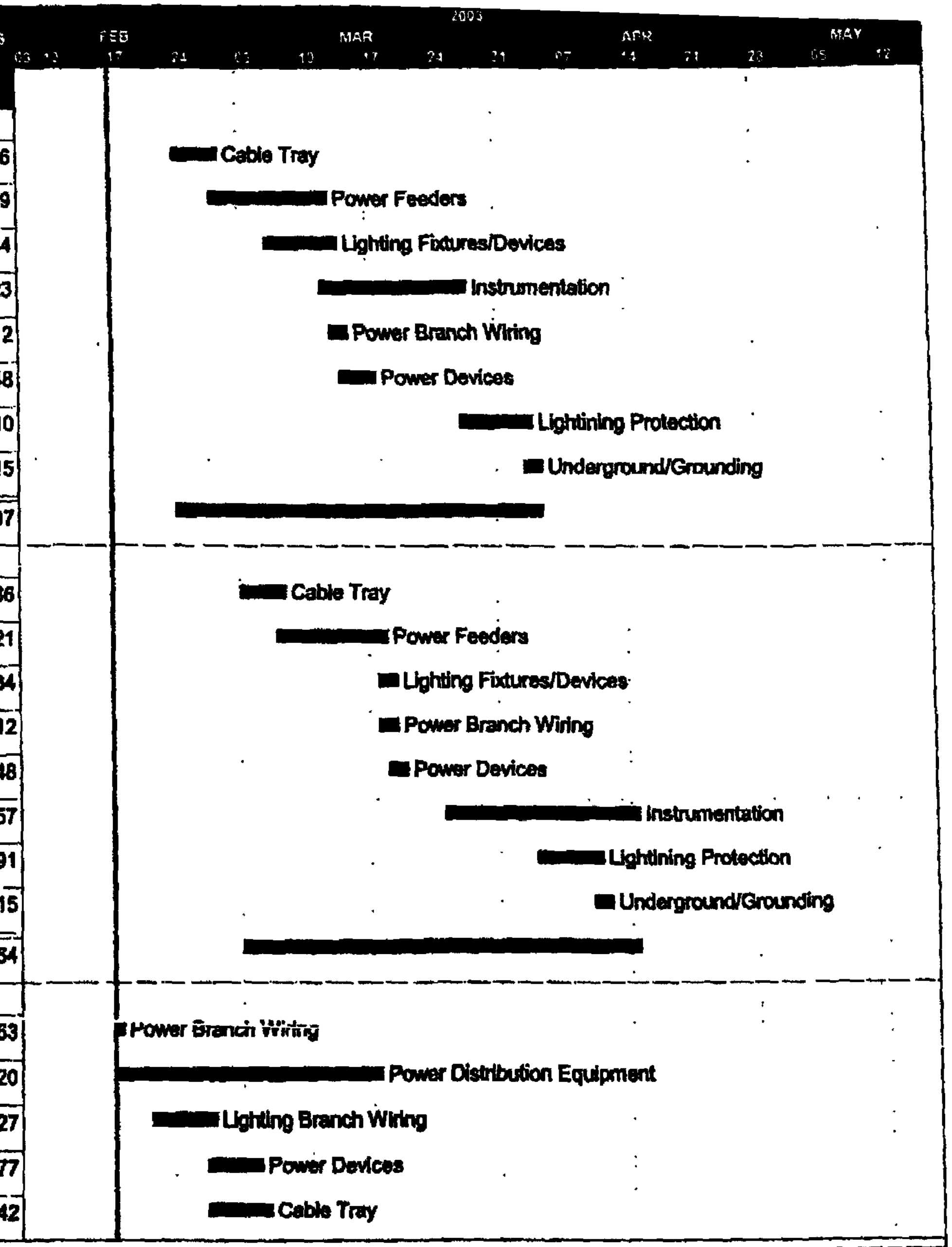
   Pat explained to them that we are self-insured through LADWP with a large policy. Endorsement forms are required due to the size of this contract.

9. Other Items

   None

IPSC Cooling Tower

Activity ID	Description	Orig Dur	Early Start	Early Finish	Man Hours
Unit 1 Cooling Tower					
110	Cable Tray	5	24FEB03	28FEB03	104.66
120	Power Feeders	10	28FEB03	12MAR03	206.89
130	Lighting Fixtures/Devices	6	06MAR03	13MAR03	63.34
160	Instrumentation	14	12MAR03	27MAR03	543.23
150	Power Branch Wiring	1	13MAR03	14MAR03	9.12
140	Power Devices	1	14MAR03	17MAR03	3.48
170	Lightining Protection	6	27MAR03	03APR03	96.10
100	Underground/Grounding	1	03APR03	04APR03	6.15
		36	24FEB03	04APR03	1,032.97
Unit 2 Cooling Tower					
190	Cable Tray	5	03MAR03	07MAR03	107.86
200	Power Feeders	9	07MAR03	18MAR03	159.21
210	Lighting Fixtures/Devices	1	18MAR03	19MAR03	9.34
230	Power Branch Wiring	1	18MAR03	19MAR03	9.12
220	Power Devices	1	19MAR03	20MAR03	3.48
240	Instrumentation	18	25MAR03	14APR03	332.57
250	Lightining Protection	5	04APR03	10APR03	88.91
180	Underground/Grounding	1	10APR03	11APR03	6.15
		38	03MAR03	14APR03	716.64
Electrical Building					
310	Power Branch Wiring	1	17FEB03	17FEB03	11.63
275	Power Distribution Equipment	25	17FEB03	17MAR03	579.20
295	Lighting Branch Wiring	6	21FEB03	27FEB03	112.27
300	Power Devices	3	27FEB03	04MAR03	18.77
270	Cable Tray	5	27FEB03	05MAR03	40.42

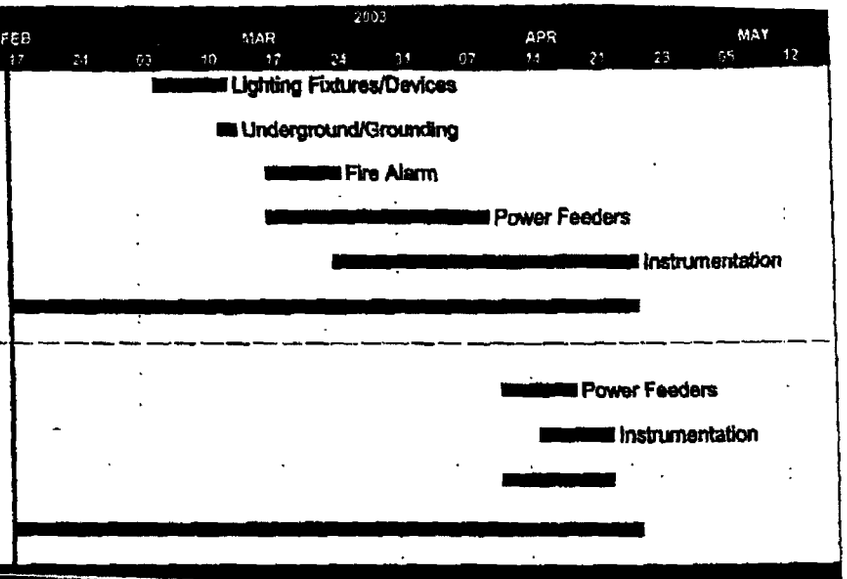


Start date	17FEB03
Finish date	25APR03
Data date	17FEB03
Run date	24JAN03
Page number	1A

GSL Electric
IPSC Cooling Tower

- Early bar
- Progress bar
- Critical bar
- Summary bar
- ◆ Start milestone point
- ◆ Finish milestone point

Activity ID	Description	Orig Dur	Early Start	Early Finish	Man Hours
290	Lighting Fixtures/Devices	6	05MAR03	12MAR03	56.04
260	Underground/Grounding	1	12MAR03	13MAR03	3.87
320	Fire Alarm	7	17MAR03	24MAR03	52.07
280	Power Feeders	21	17MAR03	09APR03	328.42
330	Instrumentation	30	24MAR03	25APR03	417.01
		62	17FEB03	25APR03	1,617.70
Existing Raceway					
340	Power Feeders	6	11APR03	18APR03	219.96
350	Instrumentation	6	15APR03	22APR03	150.37
		9	11APR03	22APR03	370.33
		62	17FEB03	25APR03	3,737.64



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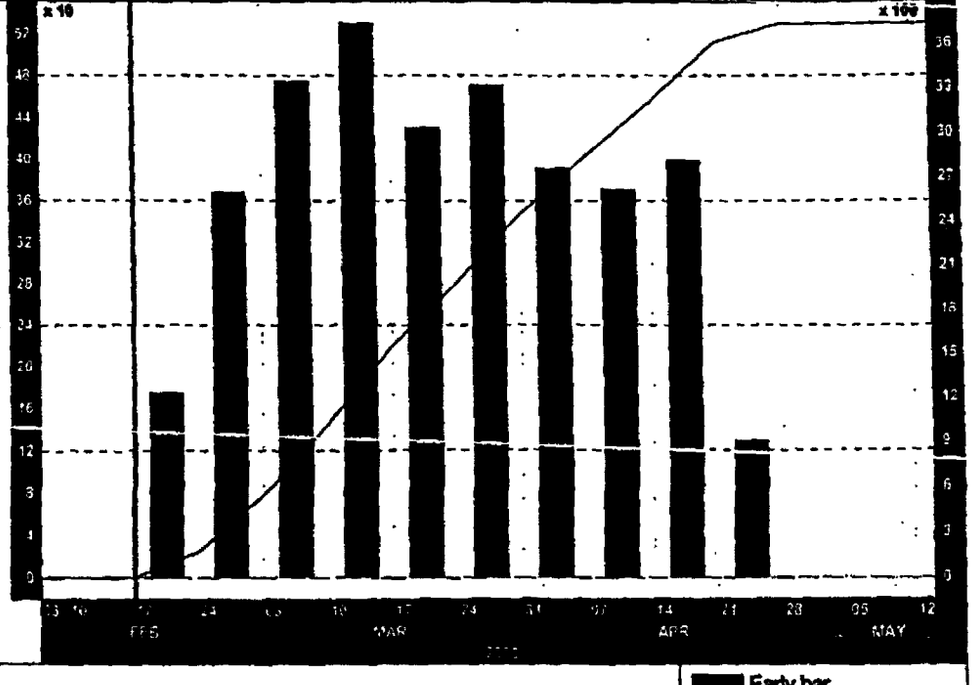


Start date	17FEB03
Finish date	25APR03
Data date	17FEB03
Run date	24JAN03
Page number	2A

GSL Electric
IPSC Cooling Tower

Early bar
Progress bar
Critical bar
Summary bar
Start milestone point
Finish milestone point

GSL ELECTRIC

G.S.L. FOREMAN Dave Riet
Telephone Number 801-556-5452
Inspector: N/A
Expected Date of Completion: May 31, 2003
Permit Number:
Project Manager: Craig Mullen 801-209-1935

	NAME	ADDRESS	PHONE NUMBER	CONTACT	COMMENTS
PROJECT	Intermountain Power Helper Cooling Tower	850 West Brush Wellman Road Delta, Uah 84624	435-864-6474	Mike Nuttall	
ARCHITECT					
ELECTRICAL ENGINEER	C-Entry	P O Box 701950 Salt Lake City, UT 84170			
GENERAL					
OWNERS	Intermountain Power	850 West Brush Wellman Road Delta, UT 84624	435-864-6400		
LIGHTS	CED Electrical Supply	1773 South 300 West Salt Lake City, UT 84115	801-486-3501 801-486-6511	Jeff Walters	
SWITCHGEAR	C E D Electrical Supply	1773 South 300 West Salt Lake City, UT 84115	801-486-3501 801-486-6511	Jeff Walters	
CABLE TRAY	Codale Electric	3150 South 900 West Salt Lake City, UT 84119	801-975-7300 801-978-9669	Tyler Mitchell	
TILITIES	N/A				

IP7_034793

GE Industrial Systems

CED
1773 SOUTH 300 WEST
SALT LAKE CITY, UT 84115
Email: Jeff@CedSlc.com

Date : 2/21/2003 V 6.32
Telephone : 801-486-3501
Fax : 801-486-6511

Bill of Material

IPP HELPER COOLING TOWER

Proposal # : 6M5-I168
Base Bid

Item#	Qty	Description	Inches
1	1	Panelboard, Type AQ (101)	
		1APA-PPL-123	
		Single Section Panel Bottom Feed Surface Mnt 24 Ckts	
		3P4W 208Y/120V 22 KAIC	
		Height : 37.5" Width : 20" Depth : 6.21"	
		150A 3 Pole THQD Main	
	1	15A 1 Pole THHQB	
	21	20A 1 Pole THHQB	
	1	20A 2 Pole THHQB	
	1	Copper Bus Heat Rated	
	1	NEMA 3R 12 Cabinets	
	2	Ground-Box bonded TGL2	
	1	AB373 Box	
	1	NONE Front	
	1	AQF3242CBX Interior AXS5B7	
		Device Layout is Customer Specified	
2	1	Panelboard, Type AQ (101)	
		2APA-PPL-123	
		Single Section Panel Bottom Feed Surface Mnt 24 Ckts	
		3P4W 208Y/120V 22 KAIC	
		Height : 37.5" Width : 20" Depth : 6.21"	
		150A 3 Pole THQD Main	
	22	20A 1 Pole THHQB	
	1	20A 2 Pole THHQB	
	1	Copper Bus Heat Rated	
	1	NEMA 3R 12 Cabinets	
	2	Ground-Box bonded TGL2	
	1	AB373 Box	
	1	NONE Front	
	1	AQF3242CBX Interior AXS5B7	
		Device Layout is Customer Specified	
3	1	Panelboard, Type AD (101)	
		1PAC-PPL-134	
		Single Section Panel Top Feed Surface Mnt 42 Ckts	

Item#	Qty	Description	Inches
		3P3W 480V 42 KAIC Height : 55.5" Width : 20" Depth : 6.21" 225A Main Lugs 2 30A 3 Pole SELA3 Space 3 20A 3 Pole SELA3 9 20A 2 Pole SELA3 1 Copper Bus Heat Rated 1 NEMA 3R 12 Cabinets 1 Ground main lug TGL20 4 Ground-Box bonded TGL2 1 AB553 Box 1 NONE Front 1 ADF3422MTX Interior AXS5B7 Device Layout is Customer Specified	
4	1	Panelboard, Type AD (101) **2APC-PPL-134** Single Section Panel Top Feed Surface Mnt 42 Ckts 3P3W 480V 42 KAIC Height : 55.5" Width : 20" Depth : 6.21" 225A Main Lugs 2 30A 3 Pole SELA3 3 20A 3 Pole SELA3 9 20A 2 Pole SELA3 1 Copper Bus Heat Rated 1 NEMA 3R 12 Cabinets 1 Ground main lug TGL20 4 Ground-Box bonded TGL2 1 AB553 Box 1 NONE Front 1 ADF3422MTX Interior AXS5B7 Device Layout is Customer Specified	
5	1	Transformer 66D **1APA-XF-123** 9T23Q3473G13 45 kVA 3 Ph NON-SIN K=13 Aluminum 60 Hz 115C Rise Type QL Impedance: 3.2 Pri: 480(+2,-4 2.5%) Sec: 208Y/120 Gem#: 2869 Elec. Shield: Yes	
6	1	Transformer 66D **2APA-XF-123** 9T23Q3473G13 45 kVA 3 Ph NON-SIN K=13 Aluminum 60 Hz 115C Rise Type QL Impedance: 3.2 Pri: 480(+2,-4 2.5%) Sec: 208Y/120 Gem#: 2869 Elec. Shield: Yes	
7	3	Enclsd NEMA Starter(10G1) CR308B1192RXDTATE	

Item#	Qty	Description	Inches

Fastrac Cycle Eligibility: 1 Day
Combination Magnetic Non-Reversing Starter
Disconnect Switch
Class R Clips 30A - 600V Fuse
Three Phase, 60 Hertz
NEMA Size 0 NEMA Type 1 Enclosure
CPT w/100 VA Extra Control Circuit
480/120V 60Hz Coil
2 PRI/1 SEC Fuse For CPT w/ 100VA Extra
1NO-1NC Aux Contacts
Solid State Overload Relay
1.6 - 3.4 Amp Range
HD Red-Across Coil & Green Thru NC Aux
Outline Diagram #: 55-178488P001
Wiring Diagram #: 55-183642

Total Lot Price $ **Price to follow**

JEFF WALTERS

A Series Panelboard Item 1 1APA-PPL-123

Panel Description

GE Type AQ Panelboard
Qty 1
225 Amp,208Y/120V
3P4W
22 KAIC SC Fully Rated
Copper Bus
Nema 3R12 Enclosure
Surface Mounted
Bottom Feed

Main Description

Amps: 150 Amp
Poles: 3 Pole
Type: Main Breaker
Cat No.: THQD32150
Acc:
Lugs: 1-lug/ph 1-cable/lug
#1 -300 mcm

Options

1 - Copper Bus Heat Rated
1 - NEMA 3R 12 Cabinets
2 - Ground-Box bonded TGL2

Branch Devices

Qty	Amps/P	Cat#
1	15A/1P	THHQB1115
21	20A/1P	THHQB1120
1	20A/2P	THHQB2120

Panel Interior

Device Layout is Customer Specified

225A PANEL END FILLER

Ckt	Type	Amps/P	Type	Amps/P	Ckt
1	THHQB	20/1	THHQB	15/1	2
3	THHQB	20/1	THHQB	20/1	4
5	THHQB	20/1	THHQB	20/1	6
7	THHQB	20/1	THHQB	20/1	8
9	THHQB	20/1	THHQB	20/1	10
11	THHQB	20/1	THHQB	20/1	12
13	THHQB	20/2	THHQB	20/1	14
	-	-	THHQB	20/1	16
17	THHQB	20/1	THHQB	20/1	18
19	THHQB	20/1	THHQB	20/1	20
21	THHQB	20/1	THHQB	20/1	22
23	THHQB	20/1	THHQB	20/1	24

150A 3P THQD
MAIN

225A NEUTRAL ONLY

*** Drawing not to scale**

Job Name:	IPP HELPER COOLING TOWER	**1A Interior**	AQF3242CBX AXS5B7
Prop No:	6M5-I168 **GE Req#:**	**1B Box**	AB373
PO#:		**1C Front**	NONE
Marks:	1APA-PPL-123 **Dated:** 02/21/2003	**Dimensions**	37.5"H x 20"W x 6.21"D

IP7_034797

A Series Panelboard Item 2 2APA-PPL-123

Panel Description

GE Type AQ Panelboard
Qty 1
225 Amp,208Y/120V
3P4W
22 KAIC SC Fully Rated
Copper Bus
Nema 3R12 Enclosure
Surface Mounted
Bottom Feed

Main Description

Amps: 150 Amp
Poles: 3 Pole
Type: Main Breaker
Cat No.: THQD32150
Acc:
Lugs: 1-lug/ph 1-cable/lug
#1 -300 mcm

Options

1 - Copper Bus Heat Rated
1 - NEMA 3R 12 Cabinets
2 - Ground-Box bonded TGL2

Branch Devices

Qty	Amps/P	Cat#
22	20A/1P	THHQB1120
1	20A/2P	THHQB2120

Panel Interior

Device Layout is Customer Specified

225A PANEL END FILLER

Ckt	Type	Amps/P	Type	Amps/P	Ckt
1	THHQB	20/1	THHQB	20/1	2
3	THHQB	20/1	THHQB	20/1	4
5	THHQB	20/1	THHQB	20/2	6
7	THHQB	20/1	-	-	
9	THHQB	20/1	THHQB	20/1	10
11	THHQB	20/1	THHQB	20/1	12
13	THHQB	20/1	THHQB	20/1	14
15	THHQB	20/1	THHQB	20/1	16
17	THHQB	20/1	THHQB	20/1	18
19	THHQB	20/1	THHQB	20/1	20
21	THHQB	20/1	THHQB	20/1	22
23	THHQB	20/1	THHQB	20/1	24

150A 3P THQD
MAIN

225A NEUTRAL ONLY

*** Drawing not to scale**

Job Name:	IPP HELPER COOLING TOWER	**2A Interior**	AQF3242CBX AXS5B7
Prop No:	6M5-I168 **GE Req#:**	**2B Box**	AB373
PO#:		**2C Front**	NONE
Marks:	2APA-PPL-123 **Dated:** 02/21/2003	**Dimensions**	37.5"H x 20"W x 6.21"D

A Series Panelboard Item 3 1PAC-PPL-134

Panel Description

E Type AD Panelboard
Qty 1
225 Amp,480
3P3W
42 KAIC SC Fully Rated
Copper Bus
Nema 3R12 Enclosure
Surface Mounted
Top Feed

Main Description

Amps: 225 Amp
Type: Main Lugs
Lugs: 1-lug/ph 1-cable/lug
#6 -350 mcm

Options

1 - Copper Bus Heat Rated
1 - NEMA 3R 12 Cabinets
1 - Ground main lug TGL20
4 - Ground-Box bonded TGL2

Branch Devices

Qty	Amps/P	Cat#
2	30A/3P	Spaces
3	20A/3P	SELA36AT0030+
3	Rating Plg	SRPE30A20
3	Lug Kit	3TCAL18
9	20A/2P	SELA24AT0030+
9	Rating Plg	SRPE30A20
9	Lug Kit	2TCAL18

Panel Interior

Device Layout is Customer Specified

225A MAIN LUGS WITH NEUTRAL

Ckt	Type	Amps/P	Type	Amps/P	Ckt
1	SELA3	20/3	SELA3	20/3	2
	-	-	-	-	
	-	-	-	-	
7	SELA3	20/3	SELA3	20/2	8
	-	-	-	-	
	-	-	-	-	
13	SELA3	20/2	SELA3	20/2	14
	-	-	-	-	
	-	-	-	-	
19	SELA3	20/2	SELA3	20/2	20
	-	-	-	-	
	-	-	-	-	
25	SELA3	20/2	SPACE	30/3	26
	-	-	-	-	
	-	-	-	-	
31	SELA3	20/2	SELA3	20/2	32
	-	-	-	-	
	-	-	-	-	
37	SPACE	30/3	SELA3	20/2	38
	-	-	-	-	
	-	-	-	-	

225A PANEL END FILLER

*** Drawing not to scale**

Job Name:	IPP HELPER COOLING TOWER		
Prop No:	6M5-I168	**GE Req#:**	
PO#:			
Marks:	1PAC-PPL-134	**Dated:**	02/21/2003

3A Interior	ADF3422MTX AXS5B7
3B Box	AB553
3C Front	NONE
Dimensions	55.5"H x 20"W x 6.21"D

IP7_034799

A Series Panelboard Item 4 2APC-PPL-134

Panel Description

GE Type AD Panelboard
Qty 1
225 Amp,480
3P3W
42 KAIC SC Fully Rated
Copper Bus
Nema 3R12 Enclosure
Surface Mounted
Top Feed

Main Description

Amps: 225 Amp
Type: Main Lugs
Lugs: 1-lug/ph 1-cable/lug
#6 -350 *mcm*

Options

1 - Copper Bus Heat Rated
1 - NEMA 3R 12 Cabinets
1 - Ground main lug TGL20
4 - Ground-Box bonded TGL2

Branch Devices

Qty	Amps/P	Cat#
2	30A/3P	SELA36AT0030+
2	Rating Plg	SRPE30A30
2	Lug Kit	3TCAL18
3	20A/3P	SELA36AT0030+
3	Rating Plg	SRPE30A20
3	Lug Kit	3TCAL18
9	20A/2P	SELA24AT0030+
9	Rating Plg	SRPE30A20
9	Lug Kit	2TCAL18

Panel Interior

Device Layout is Customer Specified

225A MAIN LUGS WITH NEUTRAL

Ckt	Type	Amps/P	Type	Amps/P	Ckt
1	SELA3	20/2	SELA3	20/2	2
	-	-	-	-	
	-	-	-	-	
7	SELA3	20/2	SELA3	20/2	8
	-	-	-	-	
	-	-	-	-	
13	SELA3	20/2	SELA3	20/2	14
	-	-	-	-	
	-	-	-	-	
19	SELA3	20/2	SELA3	20/2	20
	-	-	-	-	
	-	-	-	-	
25	SELA3	20/2	SELA3	30/3	26
	-	-	-	-	
	-	-	-	-	
31	SELA3	20/3	SELA3	20/3	32
	-	-	-	-	
	-	-	-	-	
37	SELA3	20/3	SELA3	30/3	38
	-	-	-	-	
	-	-	-	-	

225A PANEL END FILLER

*** Drawing not to scale**

Job Name:	IPP HELPER COOLING TOWER		
Prop No:	6M5-I168	**GE Req#:**	
PO#:			
Marks:	2APC-PPL-134	**Dated:**	02/21/2003

4A Interior	ADF3422MTX AXS5B7
4B Box	AB553
4C Front	NONE
Dimensions	55.5"H x 20"W x 6.21"D

Transformers

Typical Application Information

General Information
The complete family of transformers from GE provides quiet, reliable operation. All of the dry-type transformers through 1,000 kVA are UL listed under the requirements of Standard 506 and 1561. In addition, each transformer meets the requirements of NEMA ST-20, 1992. Type QB, QMS and Type QMS 3 models are CUL listed. General purpose transformers are rated 600 volts and below for supplying appliance, lighting and power loads from electrical distribution systems. Standard distribution voltages are 600, 480 and 240 volts; standard load voltages are 480, 240, 208 and 120 volts. The transformer is used to obtain the load voltage fomr the distribution voltage. Since no vaults are required for installation, these transformers can be located right at the load to provide the correct voltage for the application. This eliminates the need for long, costly, low-voltage feeders.

Construction
Types QB, QMS and QMS 3
Core and coils are contained within a NEMA 3R nonventilated weatherproof enclosure. Type QB, QMS and QMS 3 units feature encapsulated core and coils. Type QL Units are enclosed in a NEMA 2 drip-proof metal enclosure with natural-draft ventilation. Core-and-coil assembly is mounted on rubber isolation pads to reduce noise. Weathershield kits are available for conversion to a NEMA 3R enclosure suitable for outdoor protected services.

Voltage Tap Arrangement
Transformer taps compensate for high or low line voltages. Standard NEMA, ANSI three-phase taps are two 5 percent taps below normal on transformers smaller than 30 kVA. This arrangement provides a 10 percent range of tap voltage adjustment. Most standard QL units rated 15 through 500 kVA have available six universal voltage taps - four 2.5 percent below normal, and two 2.5 percent above normal. This arrangement provides a 15 percent range of tap voltage adjustment.

Termination
Improved termination spacing and wiring compartment room gives greater flexibility in selecting various UL listed connectors for either copper of aluminum cable. A listing of suitable connectors is packaged with each GE transformer.

Temperature Class
Industry standards classify insulation systems in accordance with the rating system shown below. All standard, general purpose, GE transformers meet all applicable NEMA, ANSI, UL and IEEE standards. The design life of transformers having different insulation systems is the same, since the allowable temperature rise of an insulation material system is predicated on a specified life for all insulation. The lower temperature systems are designed for the same life as higher temperature systems.

K-Factor Transformers
These type QL transformers have passed the UL K factor testing program. K factor is a UL term related to harmonics. These units shall not exceed rated winding temperature rise at full load and rated K factor. Neutrals are capable of handling 200% of rated secondary phase current. Full width copper electrostatic shielding is standard on all GE K factor rated transformers. Designed for commercial applications with significant non-linear electronic loading use K=4 for systems with 50% connected non-linear electronic loads; K=13 for systems with 100% connected non-linear electronic loads. Higher K factor rated units are available for unique applications.

Sound Levels
All general purpose transformers are as quiet, or quieter than the 1986 ANSI and NEMA Standards for sound levels. Sound characteristics vary between transformers of identical voltage and kVA rating. The range of variation may be 4 to 8 decibels. These values apply only to specified test conditions because the characteristics of the installation can cause them to be higher under operating conditions. Where acoustical noise is deemed to be of unusual concern, proper steps should be taken during installation to minimize audible noise transmission. Additionally, GE has a family of QL Transformers that are designed to perform at levels well below NEMA Standard.

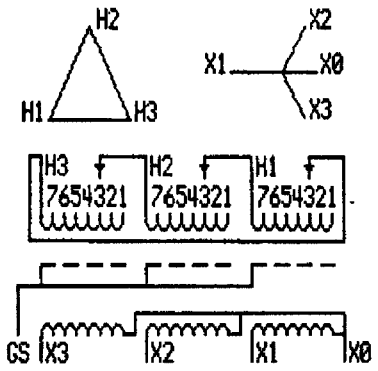
Data Sheet

Dry-Type Transformers

Item	Qty	Catalog #	Description	kVA	Type	Hz	Dimensions (in inches)				Wiring #	Layout #
							W	H	D	WGT		
6	1	9T23Q3473G13	3 Ph NON-SIN K=13 AL 115C Rise Impedance: 3.2 Gem # 2869 Pri: 480(+2,-4 2.5%) Sec: 208Y/120	45	QL	60	32.03	35.73	23.68	505	WD0150	
5	1	9T23Q3473G13	3 Ph NON-SIN K=13 AL 115C Rise Impedance: 3.2 Gem # 2869 Pri: 480(+2,-4 2.5%) Sec: 208Y/120	45	QL	60	32.03	35.73	23.68	505	WD0150	

IP7_034802

Wiring Diagrams



WD0150

**** CONFIDENTIAL TO GENERAL ELECTRIC COMPANY ****

NEMA Controls Cover Sheet

Item # : 7 **Enclsd NEMA Starter(10G1)**

Description

Outline Diagram #	:	55-178488P001
Wiring Diagram #	:	55-183642

GENERAL ELECTRIC

55-178488

CONT ON SHEET FL. SH NO. 1

REV NO.

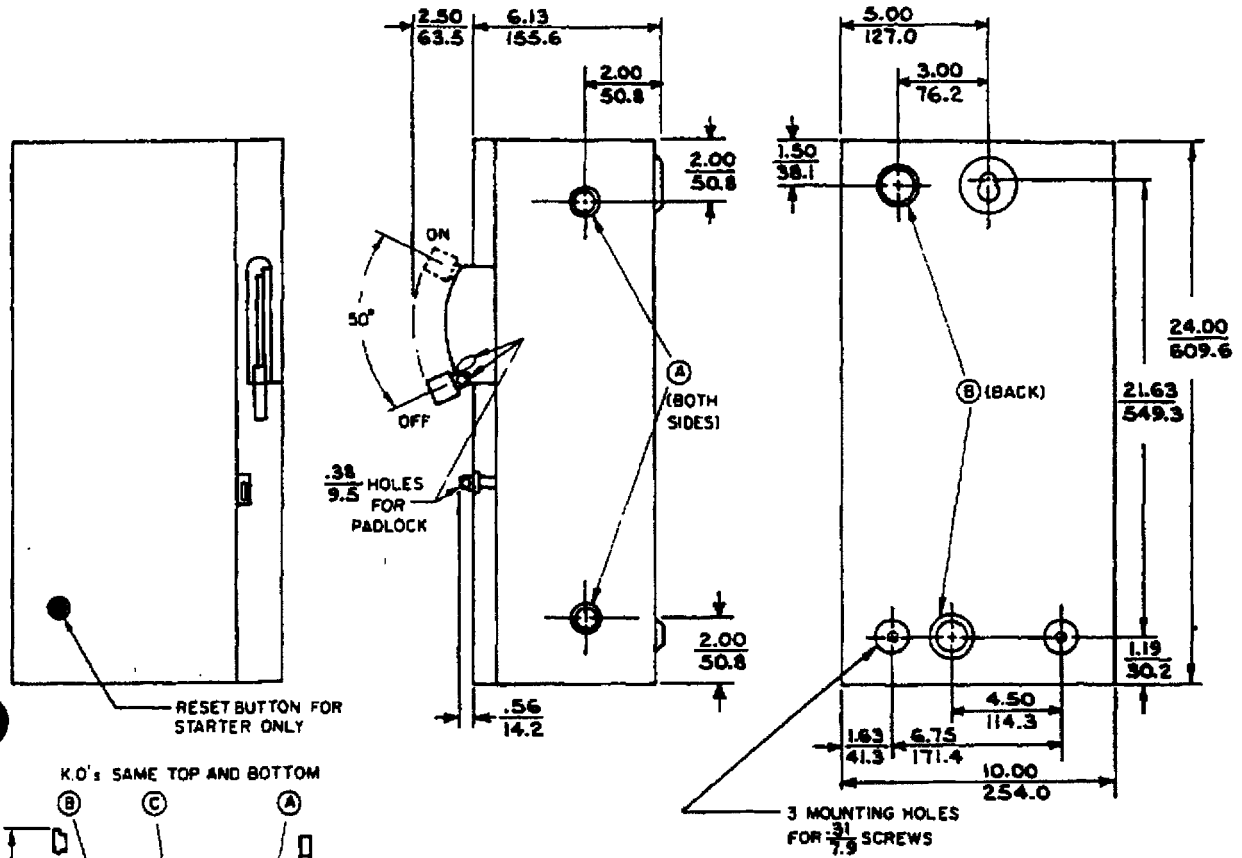
ON SHEET SH NO.

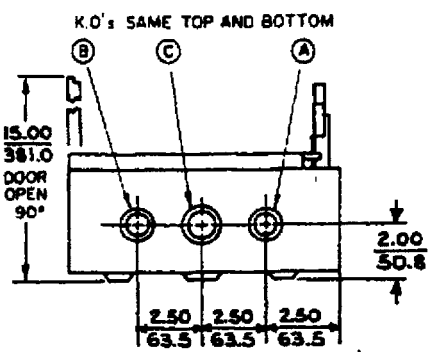
TITLE

OUTLINE

FIRST MADE FOR CR307-308 B,C & D

REVISIONS





Ⓐ COMB. K.O.'s FOR ½ OR ¾ CONDUIT
Ⓑ COMB. K.O.'s FOR ¾ OR 1" CONDUIT
Ⓒ COMB. K.O.'s FOR 1" OR 1¼ CONDUIT

DUAL DIMENSIONS = INCHES / MILLIMETERS

2 SHEETS ADDED 20, 1981

PRINTS TO

MADE BY C. DE VISSER JULY 17, 1968

ISSUED RE-May 20, 1981

APPROVALS DRW

GENERAL PURPOSE CONTROL DEPT.

BLOOMINGTON, ILL. LOCATION

55-178488

CONT ON SHEET FL. SH NO. 1

CODE IDENT NO.

IP7_034805

GE Electrical Distribution & Control

55-183642

CONT ON SHEET FL SH NO. 1

REV NO

T ON SHEET SH NO.

TITLE

WIRING INSTRUCTIONS FOR:
CR 306, 307, 308 & 387 FULL VOLTAGE, NON-REVERSING
MAGNETIC STARTERS WITH CONTROL TRANSFORMER

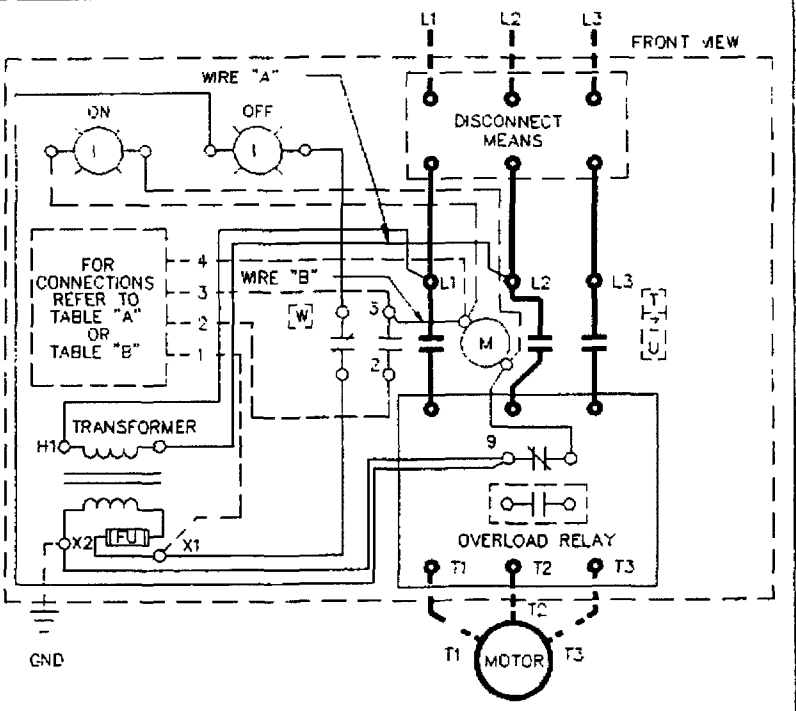
FIRST MADE FOR NEMA SIZE 00, 0 & 1

REVISIONS

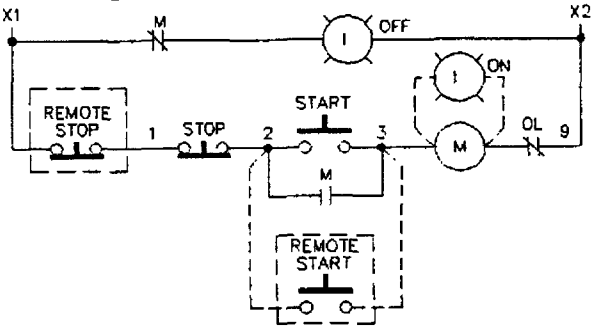
6 R. MEYER AN 94-2020

PRINTS TO

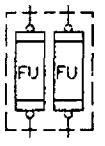
TABLE A	TABLE B
STANDARD PILOT DEVICES	OIL-TIGHT PILOT DEVICES
START-STOP: BLACK 1, WHITE 2, RED 3	START-STOP: 1, 2, 3
PUSHBUTTONS: OFF ON, WHITE 1, BLACK 4	PUSHBUTTONS: OFF ON, 1, 4
(OMIT WIRE "B")	(OMIT WIRE "B")
2 POSITION SELECTOR SWITCH: HAND RED 1, OFF, AUTO WHITE 3, BLACK 4	2 POSITION SELECTOR SWITCH: HAND OFF AUTO, 1, 3, 4
(OMIT WIRE "B")	(OMIT WIRE "B")
REMOTE DEVICE 1-3	REMOTE DEVICE 1-3
3 POSITION SELECTOR SWITCH	3 POSITION SELECTOR SWITCH



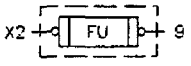
START-STOP PUSHBUTTON ELEMENTARY



CONTROL CIRCUIT FUSING

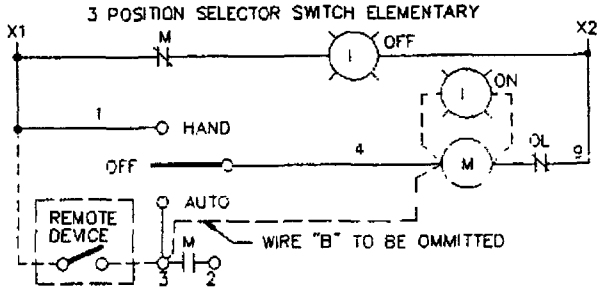


EXTRA SECONDARY FUSE

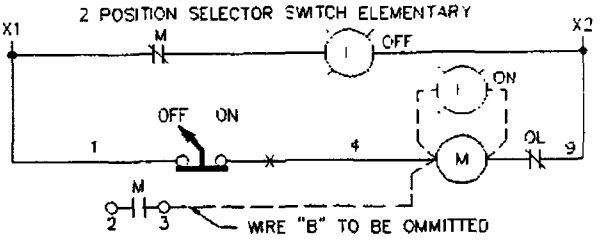


-NOMENCLATURE-
M-LINE CONTACTOR
OL-OVERLOAD RELAY
I-INDICATING LIGHT
FU-FUSE
X-INDICATES CONTACT CLOSED

3 POSITION SELECTOR SWITCH ELEMENTARY



2 POSITION SELECTOR SWITCH ELEMENTARY



2GROUND KIT

1/2-IN CONDUIT	55-213403GD01
3/4-IN CONDUIT	55-213403GD02
1-IN CONDUIT	55-213403GD03
1 1/4-IN CONDUIT	55-213403GD04
1 1/2-IN CONDUIT	55-213403GD05
2-IN CONDUIT	55-213403GD06
2 1/2-IN CONDUIT	55-213403GD07
3-IN CONDUIT	55-213403GD08

USE 75°C COPPER CONDUCTORS ONLY, FOR FIELD WIRING. TORQUE LINE AND LOAD TERMINALS AS MARKED OR AS SHOWN AT RIGHT:		LINE	LOAD
	CR306	20 LB-IN	20 LB-IN
	CR307	AS MARKED	20 LB-IN
	CR308	35 LB-IN	20 LB-IN
	CR387	AS MARKED *	20 LB-IN

NOTE: ADDITIONAL OVER-CURRENT PROTECTION MAY BE REQUIRED. REFER TO THE NATIONAL ELECTRICAL CODE OR LOCAL ELECTRICAL CODE AS REQUIRED.

FOR 1-PHASE OPERATION USING
- SOLID STATE OVERLOAD RELAY
  SEE GEH-6430(sz 1,2) OR GEH-6431 (sz 3,4)
- THERMAL OVERLOAD RELAY
  CHANGE CONNECTION WIRE "A" FROM L2 TO L3.
  CONNECT LINE TO L1 AND L3 AND LOAD TO T1 AND T3.

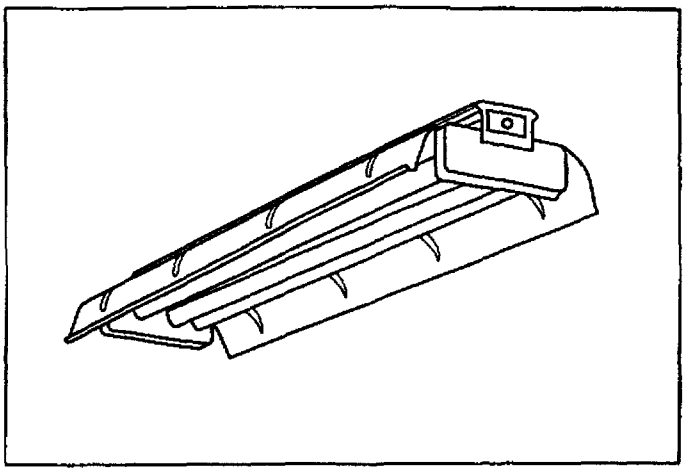
FOR STARTER WITHOUT DISCONNECT MEANS - WIRE LINE DIRECT TO L1, L2 AND L3 ON STARTER.

FOR EXTRA AUXILARY CONTACTS- A MAXIMUM OF 3 CONTACTS MAY BE ADDED AT POSITIONS T,U,W & Z FOR SIZE 0 & 1 ONLY.

MADE BY	APPROVALS		
A. WARE 5-2-71		GE E D & C (DIV OR DEPT)	55-183642
REISSUED		BLOOMINGTON, IL (LOCATION)	CONT ON SHEET FL SH NO.

IP7_034806

TYPE F1



KL4-3
KL8-3
DYNAMO INDUSTRIAL
THREE LAMP
RAPID START

Type: F1 KL4-332-3EB8120

Job Description: _____

FEATURES:

- Available in 4' and 8' lengths.
- Reflectors have 15% uplight.
- Spring loaded turret lampholders.
- 3" lamp spacing.
- For individual or continuous row mounting.
- Channel ends double as joiners.
- Reflector end closures available.

SPECIFICATIONS:

Housing
Heavy steel with longitudinal reinforcing ribs for extra strength.

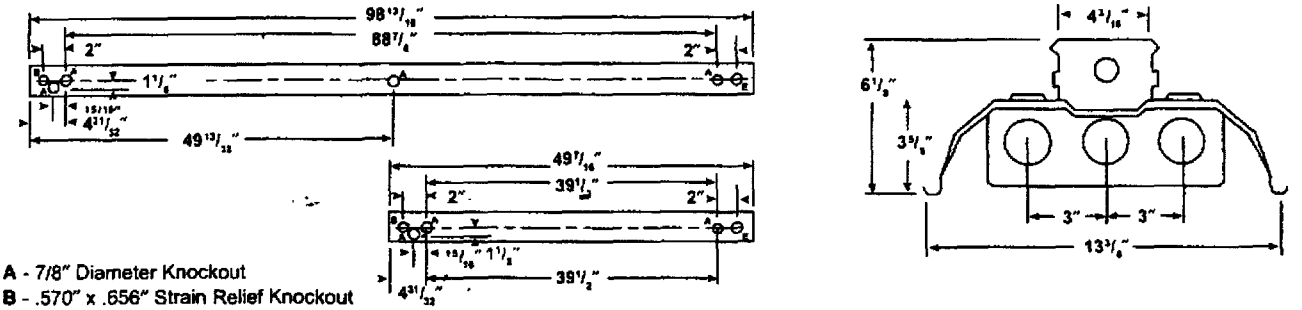
Reflector
Die embossed with transverse ribs for maximum rigidity. Smooth extruded apertures for 15% uplight.

Ballasts
Energy efficient, thermally protected, automatic resetting, Class P, high power factor, CBM, sound rated A, unless otherwise specified.

Finish
All parts pre-painted with high gloss baked white enamel, minimum reflectance 86%, applied over iron phosphate pre-treatment for maximum adhesion and rust resistance.

Labels
All fixtures carry the U.L. label. (CSA approval available. Use Suffix "CSA").

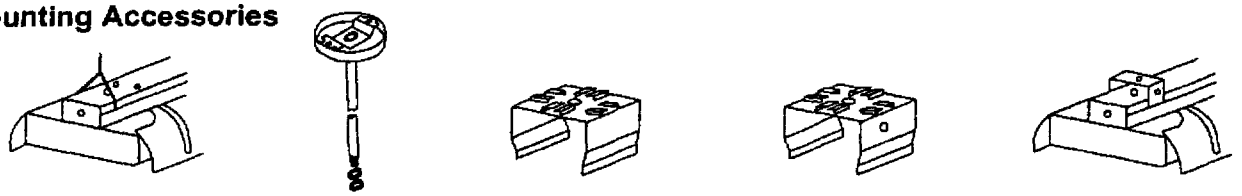
Cross Section



A - 7/8" Diameter Knockout
B - .570" x .656" Strain Relief Knockout
E - 1-1/8" Diameter Knockout

Note: All dimensions are in inches; dimensions are subject to change without notice. Please consult factory or check sample for verification.

Mounting Accessories



KHC | S18 | KZTF | KZT | KTH

CO 12/98

www.columbia-ltg.com • 3808 North Sullivan Rd. • Spokane, WA 99216 • (509) 924-7000

Columbia LIGHTING

IP7_034807

Photometric Report No. 10836

Columbia Lighting

Tel 509 924 7000
PO Box 2787 (99220) 3808 North Sullivan Road Spokane WA 99216

Environmental Laboratories

REPORT #: 10836
DATE: 5/25/94

LUMINAIRE: KL4-332 3EB8 PAF

4 ft 3 LAMP INDUSTRIAL WITH APERATURED WHITE REFLECTOR
BAL.: B332I120RH; LAMP: FO32/741; BAL. FAC.: .93; WATTS: 89
LAMPS RATED AT 2850 LUMENS EACH
LUMINOUS AREA: 40 X 12.5

REFLECTANCE: WHE .88

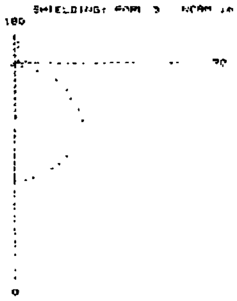
MOUNTING: PENDANT/SURFACE

S/MH: PARL 1.28 NORM 1.26

SHIELDING: PARL 5 NORM 16

CANDLEPOWER

DEG	0	22.5	45	67.5	90
0	2073.	2073.	2073.	2073.	2073.
5	2057.	2067.	2075.	2071.	2059.
15	1992.	2001.	2021.	2024.	2016.
25	1862.	1882.	1910	1935.	1970.
35	1670.	1700.	1766.	1797.	1800.
45	1421.	1467.	1552.	1547.	1667.
55	1170.	[illegible]	1332	[illegible]	1766.
65	779	888.	969.	1029.	1040
75	420.	520.	562	414.	434.
85	95.	117.	114.	114.	114.
90	10	42.	49.	49.	49.
95	21	40.	51.	56.	56.
105	82.	71.	136.	124.	110.
115	184.	61.	135.	230.	223.
125	291.	121.	54.	104.	132.
135	385.	19.	121.	81.	70.
145	455.	269.	199.	159	184.
155	489.	377.	273.	247.	291.
165	502.	468.	410.	385.	376.
175	492	521.	532.	533.	549.
180	486.	477.	542.	547.	544.



ZONAL SUMMARY

ZONE	LUMENS	LAMP	FIXT
0- 30	1645.	19.7	21.4
0- 40	2740.	32.1	35.6
0- 60	4705.	57.5	61.1
0- 90	6605.	78.2	86.0
90-120	320	3.7	4.2
90-130	425.	5.1	5.6
90-150	701.	8.2	9.1
90-180	1014.	11.9	13.2
0-180	7690	90.0	100.0

LER = FI- 80

This photometric test was performed using a specific ballast / lamp combination. Extrapolation of these data for other ballast / lamp combinations may produce erroneous results. The ballast factor must be applied to the lumen output rating assigned to the lamp(s) or to the candlepower values shown.
Luminaire efficacy rating (LER) per NEMA LE5-1993.

TESTED BY: RK APPROVED BY: [signature]

TEST RUN IN ACCORDANCE TO CURRENT I.E.S. PUBLISHED PROCEDURES

Coefficients of Utilization

Coefficients of Utilization

Zonal Cavity Method — Floor Reflectance - .20

RC	80				70				50			0
RW	70	50	30	10	70	50	30	10	50	30	10	0
1	96	91	88	84	92	88	85	82	82	80	77	67
2	87	80	74	69	84	77	72	67	72	68	64	56
3	79	70	63	58	76	68	62	56	64	58	54	47
4	73	62	54	49	70	60	53	48	56	50	46	40
5	66	55	47	41	63	53	45	40	50	43	38	33
6	61	49	41	35	58	47	40	34	44	38	33	29
7	56	44	36	30	53	42	35	30	40	33	29	25
8	51	39	31	26	49	38	31	25	36	29	25	21
9	47	35	27	22	45	34	27	22	32	26	21	18
10	44	32	24	20	42	31	24	19	29	23	19	16

Energy Data

LER: FI-80 **Energy Cost: $3.00***
Input Watts: 89 **BF: .93**

The above energy calculations were conducted using a specific lamp/ballast combination. Actual results may vary depending upon the lamp and ballast used. Lamp and ballast specifications are subject to change without notice.

*Comparative annual lighting energy cost per 1000 lumens based on 3000 hours and $0.08 per KWH.

Ordering Information

Example: KL4-332-3EB8120-GLR

KL 4 - 3 32 - ___ - 3EB8 120 - ___ - ___ - ___

Series
KL

Size
4 - 4'
8 - 8'

No. of Lamps in Cross Section
3 - Three

Lamp Type
40 - 4' T12, 40 Watt
32 - 4' T8, 32 Watt

Reflector Type
Blank - Apertured Reflector for Uplight (Standard)
ST - Solid Top (No Uplight)

Ballast
- **LE** - Energy Saving Magnetic T12
- **Z** - Zero Degree Magnetic T12*
- **EB12** - Electronic T12
- **EB12LH** - Electronic T12 <10% THD
- **3EB12** - 3 Lamp Electronic T12
- **3EB12LH** - 3 Lamp Electronic T12, <10% THD
- **OCT** - Magnetic T8 (Octron)
- **EB8** - Electronic T8
- **EB8LH** - Electronic T8 <10% THD
- **3EB8** - 3 Lamp Electronic T8
- **3EB8LH** - 3 Lamp Electronic T8, <10% THD
- **24EB8** - (1) 2 Lamp & (1) 4 Lamp Electronic T8

For a specific ballast vendor, show as option

Voltage
- **120** - 120V
- **277** - 277V
- **347** - 347V

Industrial Options
- **GLR** - Fast Blow Fuse
- **GMR** - Slow Blow Fuse
- **EL** - Emergency Battery Pack
- **BC** - Branch Circuit Plug-on Wiring System (See options section for details.)
- **CSA** - Approved, Canadian Standards Association
- **PAF** - Paint After Fabrication

Industrial Accessories
Order Separately
- **KZTF** - Zip Tee Hanger - flush mounting on tee bar ceiling
- **KZT** - Zip Tee Hanger - 1½" spacer on tee bar ceiling
- **KTH** - Slide Clamp Tong Hanger
- **S18** - 18" Stem, Canopy and 8° Aligner
- **SS18** - 18", 45° Swivel Stem & Canopy
- **KHC** - 24" Chain Hanging Assembly
- **KLEC** - Reflector End Closure
- **KLWG4** - Wire Guard 4' lg. - 2 required per 8' fixture

* Not for use with energy saving lamps.
For complete list of options and accessories, see options and accessories section.

Type 51
KPSTL151506-48
W/KR2ST

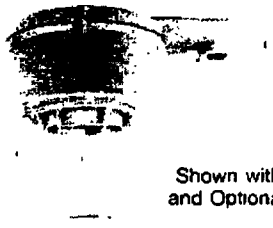
UL Listed.
Simultaneous Exposure
Class I, Div. 2/Class II, Div. 1
(See Page F1-25 for group designations)

Class I, Div. 2; Groups A,B,C,D
Class II, Div. 1 and 2; Groups E,F,G
Class III.

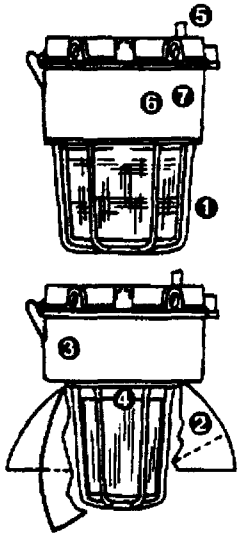
UL 1598A, UL 844. Marine Type Electric Fixtures Outside Type (Salt Water), NEMA 4X

Mercmaster™ III Enclosed and Gasketed Fixtures: High Pressure Sodium — 50W, 70W, 100W and 150W

High Reactance, High Power Factor (Min. P.F. 90%). Heat-Resistant Prismatic Glass Globe or Closed Prismatic Glass Refractor. Mogul Base Lamps

	Type Mounting	Lamp Watts	Hub Size (In.)	Catalog Numbers With Globe	Catalog Numbers With Type V 8"Refractor◆
 Shown with Globe	**25° Stanchion** One Hub	50	1-1/4	KPSL50125◊	KPSL50125J5◊
			1-1/2	KPSL50150◊	KPSL50150J5◊
		70	1-1/4	KPSL70125*	KPSL70125J5*
			1-1/2	KPSL70150*	KPSL70150J5*
		100	1-1/4	KPSL10125*	KPSL10125J5*
			1-1/2	KPSL10150*	KPSL10150J5*
		150‡	1-1/4	KPSL15125*	KPSL15125J5*
			1-1/2	KPSL15150*	KPSL15150J5*
 Shown with Globe and Optional Guard	**Straight Stanchion** One Hub	50	1-1/4	KPSTL50125◊	KPSTL50125J5◊
			1-1/2	KPSTL50150◊	KPSTL50150J5◊
		70	1-1/4	KPSTL70125*	KPSTL70125J5*
			1-1/2	KPSTL70150*	KPSTL70150J5*
		100	1-1/4	KPSTL10125*	KPSTL10125J5*
			1-1/2	KPSTL10150*	KPSTL10150J5*
		150‡	1-1/4	KPSTL15125*	KPSTL15125J5*
			1-1/2	KPSTL15150*	KPSTL15150J5*

Accessory Option



❶ Guards
Guards are die cast copper-free aluminum with baked epoxy finish to match fixtures. Fixture supplied with stainless steel mounting screws which thread into stainless steel inserts on fixture housing to attach guard. To order fixture with guard, add suffix **-G** to catalog number before adding voltage suffix.

❷ Reflectors
Standard dome and 30° angle polyester reflectors are shown elsewhere in this catalog section.

❸ Hot Restrike
Instantly restrikes a hot HPS lamp when power is restored after a momentary outage. Available factory-installed only. To order, add suffix **-R** to catalog number.

❹ Quartz Emergency Light
When ordered, HPS fixtures will be supplied with a prewired special DC bayonet base socket to accept a 150W, 120V quartz lamp **(not furnished)** that automatically switches on when a power outage occurs. **Fixtures ordered with this quartz emergency lamp feature do NOT comply with requirements for classified areas and should be used only in non-classified locations.** To order, add suffix **-E** to catalog number and specify if a relay switch is desired.

❺ Photocell and Fuses
Photocontrol shown on F1-142 and fuses on F1-39.

❻ Smart-Starter
Performs as a conventional starter in lamp start-up. Removes itself from circuit at end of lamp life or if lamp is out of socket. Add suffix **-S** to catalog number.

❼ Smart Hot Restrike
Will immediately restrike HPS lamp when power is restored after a momentary power interruption. The smart function removes the hot restrike ignitor from the circuit if the lamp burns out or is removed from the socket. Eliminates starter failures caused by prolonged operation with cycling or failing lamps. Add suffix **-SR** to catalog number.

◆To order fixture with 8" NEMA Type 1 refractor, change final digit 5 in Cat. No. to 1; for NEMA Type 3 refractor, change 5 to 3. ◊50W fixtures have dual tap ballast for 120V and 277V only; add suffix **-DT**. *Add voltage suffix **-MT** for 120, 208, 240 or 277V; **-48** for 480V. ‡For 150W HPS fixtures, use S-55 lamp type only.

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IP7_034809

Accessories and Replacement Parts for Mercmaster™ III Lighting Fixtures

	Item	Description	Catalog Number
	**White Polyester Reflectors — 50W-250W**		
	For Globe Fixtures	Standard Dome	KR2-ST
		30° Angle	KR2-AN
	For Refractor Fixtures‡	Standard Dome	**CMR-4ST
		30° Angle	**CMR-4AN
	**Prismatic Glass Globes — Heat-Resistant**	Clear	VPGL-2HR
		Amber	VPGL-2AM
		Blue	VPGL-2BL
		Green	VPGL-2GR
		Red	VPGL-2RE
	**Tuff-Skin® Coated Prismatic Glass Globes For Non-Classified Areas**		
	For use in areas where fixture is subject to extreme thermal shock	Clear Heat Resistant	VPGL-2HRT
	**Polycarbonate Globes — Impact-Resistant****		
	Use 100 Watt Lamp max. Do not use in ambients exceeding 25°C.	Clear	VPGL-2PL
		Amber	VPGL-2AMPL
		Green	VPGL-2GRPL
		Red	VPGL-2REPL
	**Closed Prismatic Glass Refractors — 50W-250W**		
	All Heat-Resistant.	NEMA Type 1	LPG-R1
		NEMA Type 3	LPG-R3
		NEMA Type 5	LPG-R5
	**Closed Prismatic Polymeric Refractors**		
	Suitable for Class II, Div. 1 & 2, Groups F & G, NEMA 4X. UL 1598A Marine Type Electric Fixtures Outside Type (Salt Water) For use with MH lamps, 100W max. 40°C max. ambient temperature.	NEMA Type 2	LPRF-2CP
		NEMA Type 3	LPRF-3CP
		NEMA Type 4	LPRF-4CP
		NEMA Type 5	LPRF-5CP

‡Not U.L. Listed with reflectors. Consult factory if used with KPST or KPWB mounting hoods. **Polycarbonate globes are shatter-resistant — for use in processing plants, canneries, dairies, bakeries or anywhere broken glass would prove a hazard. Ideally suited for areas where vandalism, high replacement and maintenance costs are a problem. Do not use in ambients exceeding 25°C. For burning in vertical base up positions only.

Type W:
KPWBL1575G-MT
W/KR2ST

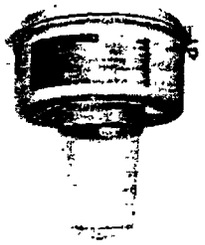
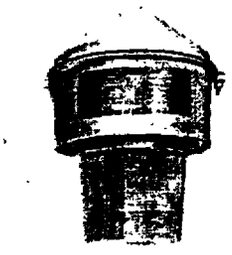
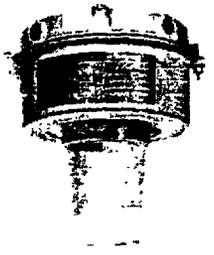
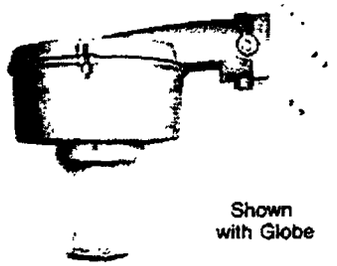
UL Listed.
Simultaneous Exposure
Class I, Div. 2/Class II, Div. 1
(See Page F1-25 for group designations)

Class I, Div. 2; Groups A,B,C,D
Class II, Div. 1 and 2; Groups E,F,G
Class III.

UL 1598A, UL 844, Marine Type Electric Fixtures Outside Type (Salt Water), NEMA 4X

Mercmaster™ III Enclosed and Gasketed Fixtures: High Pressure Sodium — 50W, 70W, 100W and 150W

High Reactance, High Power Factor (Min. P.F. 90%). Heat-Resistant Prismatic Glass Globe or Closed Prismatic Glass Refractor. Mogul Base Lamps.

	Type Mounting	Lamp Watts	Hub Size (In.)	Catalog Numbers☆ With Globe	Catalog Numbers☆ With Type V 8"Refractor◆
 Shown with Globe	**Pendant** One Hub Rigid Mounting†	50	3/4	KPAL5075◊	KPAL5075J5◊
			1	KPAL5010◊	KPAL5010J5◊
		70	3/4	KPAL7075*	KPAL7075J5*
			1	KPAL7010*	KPAL7010J5*
		100	3/4	KPAL1075*	KPAL1075J5*
			1	KPAL1010*	KPAL1010J5*
		150‡	3/4	KPAL1575*	KPAL1575J5*
			1	KPAL1510*	KPAL1510J5*
 Shown with Refractor	**Pendant Cone Hood** One Hub, Rigid Mounting	50	3/4	KPCHL5075◊	KPCHL5075J5◊
			1	KPCHL5010◊	KPCHL5010J5◊
		70	3/4	KPCHL7075*	KPCHL7075J5*
			1	KPCHL7010*	KPCHL7010J5*
		100	3/4	KPCHL1075*	KPCHL1075J5*
			1	KPCHL1010*	KPCHL1010J5*
		150‡	3/4	KPCHL1575*	KPCHL1575J5*
			1	KPCHL1510*	KPCHL1510J5*
 Shown with Globe	**Ceiling** Five Hubs, Four Close-Up Plugs	50	3/4	KPCL5075◊	KPCL5075J5◊
			1	KPCL5010◊	KPCL5010J5◊
		70	3/4	KPCL7075*	KPCL7075J5*
			1	KPCL7010*	KPCL7010J5*
		100	3/4	KPCL1075*	KPCL1075J5*
			1	KPCL1010*	KPCL1010J5*
		150‡	3/4	KPCL1575*	KPCL1575J5*
			1	KPCL1510*	KPCL1510J5*
 Shown with Globe	**Wall** Five Hubs Four Close-Up Plugs	50	3/4	KPWBL5075◊	KPWBL5075J5◊
			1	KPWBL5010◊	KPWBL5010J5◊
		70	3/4	KPWBL7075*	KPWBL7075J5*
			1	KPWBL7010*	KPWBL7010J5*
		100	3/4	KPWBL1075*	KPWBL1075J5*
			1	KPWBL1010*	KPWBL1010J5*
		150‡	3/4	KPWBL1575*	KPWBL1575J5*
			1	KPWBL1510*	KPWBL1510J5*

◆To order fixture with 8" NEMA Type 1 refractor, change final digit 5 in Cat. No. to 1; for NEMA Type 3 refractor, change 5 to 3. ◊50W fixtures have dual tap ballast for 120V and 277V only; add suffix -DT. *Add voltage suffix -MT for 120, 208, 240 or 277V; -48 for 480V. ‡For 150W HPS fixtures, use S-55 lamp type only. †For flexible pendant mount, change A to F in catalog number, except for 50W HPS. See next page for accessory ordering information.

Effective September, 2002

Appleton
7770 N. Frontage Road
Skokie, Illinois 60077

F1-28

UL Listed.
Simultaneous Exposure
Class I, Div. 2/Class II, Div. 1
(See Page F1-25 for group designations)

Class I, Div. 2; Groups A,B,C,D
Class II, Div. 1 and 2; Groups E,F,G
Class III.

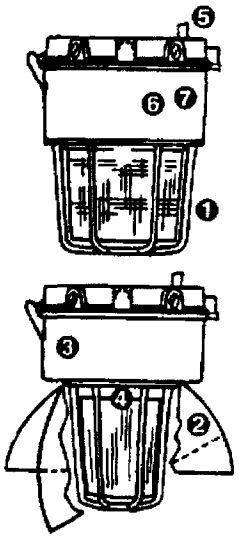
UL 1598A, UL 844. Marine Type Electric Fixtures Outside Type (Salt Water), NEMA 4X

Mercmaster™ III Enclosed and Gasketed Fixtures: High Pressure Sodium — 50W, 70W, 100W and 150W

High Reactance, High Power Factor (Min. P.F. 90%). Heat-Resistant Prismatic Glass Globe or Closed Prismatic Glass Refractor.
Mogul Base Lamps

	Type Mounting	Lamp Watts	Hub Size (In.)	Catalog Numbers With Globe	Catalog Numbers With Type V 8"Refractor◆
 Shown with Globe	**25° Stanchion** One Hub	50	1-1/4	KPSL50125◊	KPSL50125J5◊
			1-1/2	KPSL50150◊	KPSL50150J5◊
		70	1-1/4	KPSL70125*	KPSL70125J5*
			1-1/2	KPSL70150*	KPSL70150J5*
		100	1-1/4	KPSL10125*	KPSL10125J5*
			1-1/2	KPSL10150*	KPSL10150J5*
		150‡	1-1/4	KPSL15125*	KPSL15125J5*
			1-1/2	KPSL15150*	KPSL15150J5*
 Shown with Globe and Optional Guard	**Straight Stanchion** One Hub	50	1-1/4	KPSTL50125◊	KPSTL50125J5◊
			1-1/2	KPSTL50150◊	KPSTL50150J5◊
		70	1-1/4	KPSTL70125*	KPSTL70125J5*
			1-1/2	KPSTL70150*	KPSTL70150J5*
		100	1-1/4	KPSTL10125*	KPSTL10125J5*
			1-1/2	KPSTL10150*	KPSTL10150J5*
		150‡	1-1/4	KPSTL15125*	KPSTL15125J5*
			1-1/2	KPSTL15150*	KPSTL15150J5*

Accessory Option



❶ Guards
Guards are die cast copper-free aluminum with baked epoxy finish to match fixtures. Fixture supplied with stainless steel mounting screws which thread into stainless steel inserts on fixture housing to attach guard. To order fixture with guard, add suffix **-G** to catalog number before adding voltage suffix.

❷ Reflectors
Standard dome and 30° angle polyester reflectors are shown elsewhere in this catalog section.

❸ Hot Restrike
Instantly restrikes a hot HPS lamp when power is restored after a momentary outage. Available factory-installed only. To order, add suffix **-R** to catalog number.

❹ Quartz Emergency Light
When ordered, HPS fixtures will be supplied with a prewired special DC bayonet base socket to accept a 150W, 120V quartz lamp **(not furnished)** that automatically switches on when a power outage occurs. **Fixtures ordered with this quartz emergency lamp feature do NOT comply with requirements for classified areas and should be used only in non-classified locations.** To order, add suffix **-E** to catalog number and specify if a relay switch is desired.

❺ Photocell and Fuses
Photocontrol shown on F1-142 and fuses on F1-39.

❻ Smart-Starter
Performs as a conventional starter in lamp start-up. Removes itself from circuit at end of lamp life or if lamp is out of socket. Add suffix **-S** to catalog number.

❼ Smart Hot Restrike
Will immediately restrike HPS lamp when power is restored after a momentary power interruption. The smart function removes the hot restrike ignitor from the circuit if the lamp burns out or is removed from the socket. Eliminates starter failures caused by prolonged operation with cycling or failing lamps. Add suffix **-SR** to catalog number.

◆To order fixture with 8" NEMA Type 1 refractor, change final digit 5 in Cat. No. to 1; for NEMA Type 3 refractor, change 5 to 3. ◊50W fixtures have dual tap ballast for 120V and 277V only; add suffix **-DT**. *Add voltage suffix **-MT** for 120, 208, 240 or 277V; **-48** for 480V. ‡For 150W HPS fixtures, use S-55 lamp type only.

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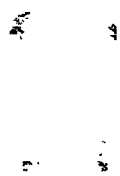
Accessories and Replacement Parts for Mercmaster™ III Lighting Fixtures

	Item	Description	Catalog Number
	**White Polyester Reflectors — 50W-250W**		
	For Globe Fixtures	Standard Dome	KR2-ST
		30° Angle	KR2-AN
	For Refractor Fixtures‡	Standard Dome	**CMR-4ST
		30° Angle	**CMR-4AN
	**Prismatic Glass Globes — Heat-Resistant**	Clear	VPGL-2HR
		Amber	VPGL-2AM
		Blue	VPGL-2BL
		Green	VPGL-2GR
		Red	VPGL-2RE
	**Tuff-Skin® Coated Prismatic Glass Globes For Non-Classified Areas**		
	For use in areas where fixture is subject to extreme thermal shock	Clear Heat Resistant	VPGL-2HRT
	**Polycarbonate Globes — Impact-Resistant****		
	Use 100 Watt Lamp max. Do not use in ambients exceeding 25°C.	Clear	VPGL-2PL
		Amber	VPGL-2AMPL
		Green	VPGL-2GRPL
		Red	VPGL-2REPL
	**Closed Prismatic Glass Refractors — 50W-250W**		
	All Heat-Resistant	NEMA Type 1	LPG-R1
		NEMA Type 3	LPG-R3
		NEMA Type 5	LPG-R5
	**Closed Prismatic Polymeric Refractors**		
	Suitable for Class II, Div. 1 & 2, Groups F & G, NEMA 4X, UL 1598A Marine Type Electric Fixtures Outside Type (Salt Water)	NEMA Type 2	LPRF-2CP
		NEMA Type 3	LPRF-3CP
		NEMA Type 4	LPRF-4CP
		NEMA Type 5	LPRF-5CP
	For use with MH lamps, 100W max. 40°C max. ambient temperature.		

‡Not U.L. Listed with reflectors. Consult factory if used with KPST or KPWB mounting hoods. **Polycarbonate globes are shatter-resistant — for use in processing plants, canneries, dairies, bakeries or anywhere broken glass would prove a hazard. Ideally suited for areas where vandalism, high replacement and maintenance costs are a problem. Do not use in ambients exceeding 25°C. For burning in vertical base up positions only.

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KPWBL5756-MT
W/KR2ST, PC120

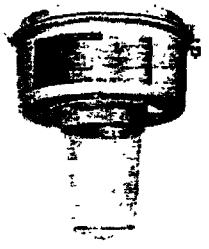
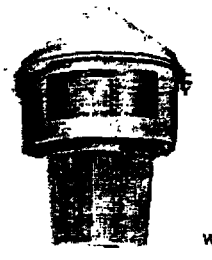
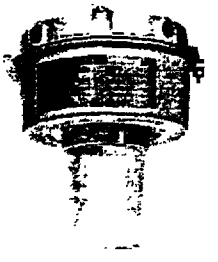
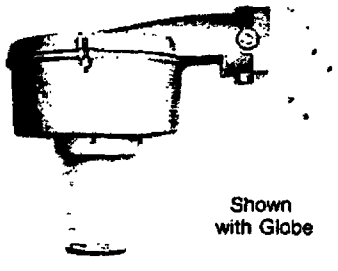
UL Listed.
Simultaneous Exposure
Class I, Div. 2/Class II, Div. 1
(See Page F1-25 for group designations)

Class I, Div. 2; Groups A,B,C,D
Class II, Div. 1 and 2; Groups E,F,G
Class III.

UL 1598A, UL 844. Marine Type Electric Fixtures Outside Type (Salt Water), NEMA 4X

Mercmaster™ III Enclosed and Gasketed Fixtures: High Pressure Sodium — 50W, 70W, 100W and 150W

High Reactance, High Power Factor (Min. P.F. 90%). Heat-Resistant Prismatic Glass Globe or Closed Prismatic Glass Refractor. Mogul Base Lamps.

	Type Mounting	Lamp Watts	Hub Size (In.)	Catalog Numbers☆ With Globe	Catalog Numbers☆ With Type V 8"Refractor◆
 Shown with Globe	**Pendant** One Hub Rigid Mounting†	50	3/4	KPAL5075◊	KPAL5075J5◊
			1	KPAL5010◊	KPAL5010J5◊
		70	3/4	KPAL7075*	KPAL7075J5*
			1	KPAL7010*	KPAL7010J5*
		100	3/4	KPAL1075*	KPAL1075J5*
			1	KPAL1010*	KPAL1010J5*
		150‡	3/4	KPAL1575*	KPAL1575J5*
			1	KPAL1510*	KPAL1510J5*
 Shown with Refractor	**Pendant Cone Hood** One Hub, Rigid Mounting	50	3/4	KPCHL5075◊	KPCHL5075J5◊
			1	KPCHL5010◊	KPCHL5010J5◊
		70	3/4	KPCHL7075*	KPCHL7075J5*
			1	KPCHL7010*	KPCHL7010J5*
		100	3/4	KPCHL1075*	KPCHL1075J5*
			1	KPCHL1010*	KPCHL1010J5*
		150‡	3/4	KPCHL1575*	KPCHL1575J5*
			1	KPCHL1510*	KPCHL1510J5*
 Shown with Globe	**Ceiling** Five Hubs, Four Close-Up Plugs	50	3/4	KPCL5075◊	KPCL5075J5◊
			1	KPCL5010◊	KPCL5010J5◊
		70	3/4	KPCL7075*	KPCL7075J5*
			1	KPCL7010*	KPCL7010J5*
		100	3/4	KPCL1075*	KPCL1075J5*
			1	KPCL1010*	KPCL1010J5*
		150‡	3/4	KPCL1575*	KPCL1575J5*
			1	KPCL1510*	KPCL1510J5*
 Shown with Globe	**Wall** Five Hubs Four Close-Up Plugs	50	3/4	KPWBL5075◊	KPWBL5075J5◊
			1	KPWBL5010◊	KPWBL5010J5◊
		70	3/4	KPWBL7075*	KPWBL7075J5*
			1	KPWBL7010*	KPWBL7010J5*
		100	3/4	KPWBL1075*	KPWBL1075J5*
			1	KPWBL1010*	KPWBL1010J5*
		150‡	3/4	KPWBL1575*	KPWBL1575J5*
			1	KPWBL1510*	KPWBL1510J5*

◆To order fixture with 8" NEMA Type 1 refractor, change final digit 5 in Cat. No. to 1; for NEMA Type 3 refractor, change 5 to 3. ◊50W fixtures have dual tap ballast for 120V and 277V only; add suffix -DT. *Add voltage suffix -MT for 120, 208, 240 or 277V; -48 for 480V. ‡For 150W HPS fixtures, use S-55 lamp type only. †For flexible pendant mount, change A to F in catalog number, except for 50W HPS. *See next page for accessory ordering information.*

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7770 N. Frontage Road
Skokie, Illinois 60077

IP7_034814

UL Listed.
Simultaneous Exposure
Class I, Div. 2/Class II, Div. 1
(See Page F1-25 for group designations)

Class I, Div. 2; Groups A,B,C,D
Class II, Div. 1 and 2; Groups E,F,G
Class III.

UL 1598A, UL 844. Marine Type Electric Fixtures Outside Type (Salt Water), NEMA 4X

Mercmaster™ III Enclosed and Gasketed Fixtures: High Pressure Sodium — 50W, 70W, 100W and 150W

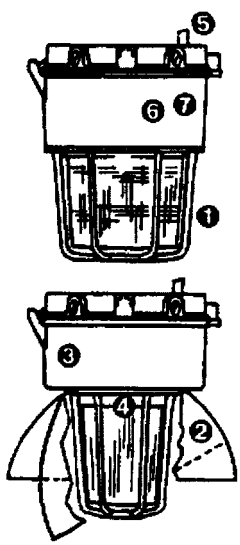
High Reactance, High Power Factor (Min. P.F. 90%). Heat-Resistant Prismatic Glass Globe or Closed Prismatic Glass Refractor.
Mogul Base Lamps

Shown with Globe

Shown with Globe and Optional Guard

Type Mounting	Lamp Watts	Hub Size (in.)	Catalog Numbers With Globe	Catalog Numbers With Type V 8"Refractor◆
25° Stanchion One Hub	50	1-1/4	KPSL50125◊	KPSL50125J5◊
		1-1/2	KPSL50150◊	KPSL50150J5◊
	70	1-1/4	KPSL70125*	KPSL70125J5*
		1-1/2	KPSL70150*	KPSL70150J5*
	100	1-1/4	KPSL10125*	KPSL10125J5*
		1-1/2	KPSL10150*	KPSL10150J5*
	150‡	1-1/4	KPSL15125*	KPSL15125J5*
		1-1/2	KPSL15150*	KPSL15150J5*
Straight Stanchion One Hub	50	1-1/4	KPSTL50125◊	KPSTL50125J5◊
		1-1/2	KPSTL50150◊	KPSTL50150J5◊
	70	1-1/4	KPSTL70125*	KPSTL70125J5*
		1-1/2	KPSTL70150*	KPSTL70150J5*
	100	1-1/4	KPSTL10125*	KPSTL10125J5*
		1-1/2	KPSTL10150*	KPSTL10150J5*
	150‡	1-1/4	KPSTL15125*	KPSTL15125J5*
		1-1/2	KPSTL15150*	KPSTL15150J5*

Accessory Option



❶ Guards
Guards are die cast copper-free aluminum with baked epoxy finish to match fixtures. Fixture supplied with stainless steel mounting screws which thread into stainless steel inserts on fixture housing to attach guard. To order fixture with guard, add suffix -G to catalog number before adding voltage suffix.

❷ Reflectors
Standard dome and 30° angle polyester reflectors are shown elsewhere in this catalog section.

❸ Hot Restrike
Instantly restrikes a hot HPS lamp when power is restored after a momentary outage. Available factory-installed only. To order, add suffix -R to catalog number.

❹ Quartz Emergency Light
When ordered, HPS fixtures will be supplied with a prewired special DC bayonet base socket to accept a 150W, 120V quartz lamp **(not furnished)** that automatically switches on when a power outage occurs. **Fixtures ordered with this quartz emergency lamp feature do NOT comply with requirements for classified areas and should be used only in non-classified locations.** To order, add suffix -E to catalog number and specify if a relay switch is desired.

❺ Photocell and Fuses
Photocontrol shown on F1-142 and fuses on F1-39.

❻ Smart-Starter
Performs as a conventional starter in lamp start-up. Removes itself from circuit at end of lamp life or if lamp is out of socket. Add suffix -S to catalog number.

❼ Smart Hot Restrike
Will immediately restrike HPS lamp when power is restored after a momentary power interruption. The smart function removes the hot restrike ignitor from the circuit if the lamp burns out or is removed from the socket. Eliminates starter failures caused by prolonged operation with cycling or failing lamps. Add suffix -SR to catalog number.

◆To order fixture with 8" NEMA Type 1 refractor, change final digit 5 in Cat. No. to 1; for NEMA Type 3 refractor, change 5 to 3. ◊50W fixtures have dual tap ballast for 120V and 277V only; add suffix **-DT**. *Add voltage suffix **-MT** for 120, 208, 240 or 277V; **-48** for 480V. ‡For 150W HPS fixtures, use S-55 lamp type only.

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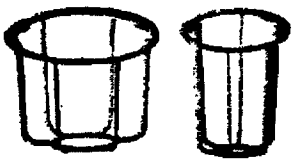
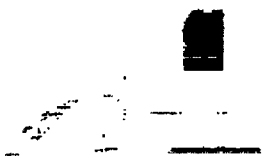
Accessories and Replacement Parts for Mercmaster™ III Lighting Fixtures

	Item	Description	Catalog Number
	**White Polyester Reflectors — 50W-250W**		
	For Globe Fixtures	Standard Dome	KR2-ST
		30° Angle	KR2-AN
	For Refractor Fixtures‡	Standard Dome	**CMR-4ST
		30° Angle	**CMR-4AN
	**Prismatic Glass Globes — Heat-Resistant**	Clear	VPGL-2HR
		Amber	VPGL-2AM
		Blue	VPGL-2BL
		Green	VPGL-2GR
		Red	VPGL-2RE
	**Tuff-Skin' Coated Prismatic Glass Globes For Non-Classified Areas**		
	For use in areas where fixture is subject to extreme thermal shock	Clear Heat Resistant	VPGL-2HRT
	**Polycarbonate Globes — Impact-Resistant****		
	Use 100 Watt Lamp max. Do not use in ambients exceeding 25°C.	Clear	VPGL-2PL
		Amber	VPGL-2AMPL
		Green	VPGL-2GRPL
		Red	VPGL-2REPL
	**Closed Prismatic Glass Refractors — 50W-250W**		
	All Heat-Resistant.	NEMA Type 1	LPG-R1
		NEMA Type 3	LPG-R3
		NEMA Type 5	LPG-R5
	**Closed Prismatic Polymeric Refractors**		
	Suitable for Class II, Div. 1 & 2, Groups F & G, NEMA 4X, UL 1598A Marine Type Electric Fixtures Outside Type (Salt Water)	NEMA Type 2	LPRF-2CP
		NEMA Type 3	LPRF-3CP
		NEMA Type 4	LPRF-4CP
		NEMA Type 5	LPRF-5CP
	For use with MH lamps, 100W max. 40°C max. ambient temperature.		

‡Not U.L. Listed with reflectors. Consult factory if used with KPST or KPWB mounting hoods. **Polycarbonate globes are shatter-resistant — for use in processing plants, canneries, dairies, bakeries or anywhere broken glass would prove a hazard. Ideally suited for areas where vandalism, high replacement and maintenance costs are a problem. Do not use in ambients exceeding 25°C. For burning in vertical base up positions only.

Accessories and Replacement Parts for Mercmaster™ III Lighting Fixtures

	Item	Description	Catalog Number
	**Copper-Free Aluminum Guards**		
		Globe Guard	KGU2
		Refractor Guard	KRG2
	**Replacement Gaskets — Silicone Rubber**		
		Globe Gasket	VPGL-GK
		Refractor Gasket	KRF-GK
	**Photocell**		
	For automatic dusk-to-dawn "On-Off" control—fits all mounting hoods except ceiling and cone. Not for use in classified areas.	120 Volt	PC120
		208 and 240 Volt	PC248
		277 Volt	PC277
	See F1-142 for PCD2 Series Factory Sealed Photocontrol.		
	**Retrofit Pendant Mounting Adapter**		
	Permits use of Mercmaster III pendant hood with 3/4" hub on existing V-51 mounting hood		LPAD-1

Mercmaster III Ballast Housing, Component and Accessory Weights

Lamp Watts	Ballast Type◆	Globe Housing with Ballast (Wt. Lbs.)*†				Refractor Housing with Ballast (Wt. Lbs.)*†			
		HPS	MH	PSMH	MV	HPS	MH	PSMH	MV
50	DT	12-1/2	----	----	----	13	----	----	----
70	MT	14	----	----	----	14-1/2	----	----	----
	480V	15	----	----	----	15-1/2	----	----	----
100	MT	15-1/2	----	----	12-1/2	16	----	----	13
	480V	16	----	----	12-1/2	16-1/2	----	----	13
150	MT	16-1/2	----	----	----	17	----	----	----
	480V	17	----	----	----	17-1/2	----	----	----
175	MT	----	16	16-1/4	14	----	16-3/4	17	14-1/2
	480V	----	17	17-1/4	15	----	17-1/2	17-3/4	15-1/2
200	MT	----	----	17	----	----	----	17-3/4	----
	480V	----	----	18	----	----	----	18-1/2	----
250	MT	----	18	----	15	----	18-3/4	----	15-1/2
	480V	----	19	----	15-1/4	----	19-1/2	----	16

Component and Accessory Weights*

Mounting Hoods	Wt. Lbs.
Pendant	2-1/4
Pendant Cone	2-1/2
Ceiling	3
Wall	4
25° Stanchion	3-1/4
Straight Stanchion	3-1/3
Reflectors	**Wt. Lbs.**
Standard Dome	2-1/2
30° Angle	2-1/2

Refractors, Globes & Guard	Wt. Lbs.
8" Glass Refractor	5-1/4
Glass Globe	3-3/4
Glass Glove	3-3/4
Globe Guard	1
Refractor Guard	1
Polymeric Refractor	2-1/2

*Weights are approximate. †Add 1 lb. for HPS Fixtures with Hot Restrike. Add 1/4 lb. for Quartz Emergency Light.
◆DT= Dual Tap (120V or 277V); MT - Multi-Tap (120V, 208V, 240V or 277V).

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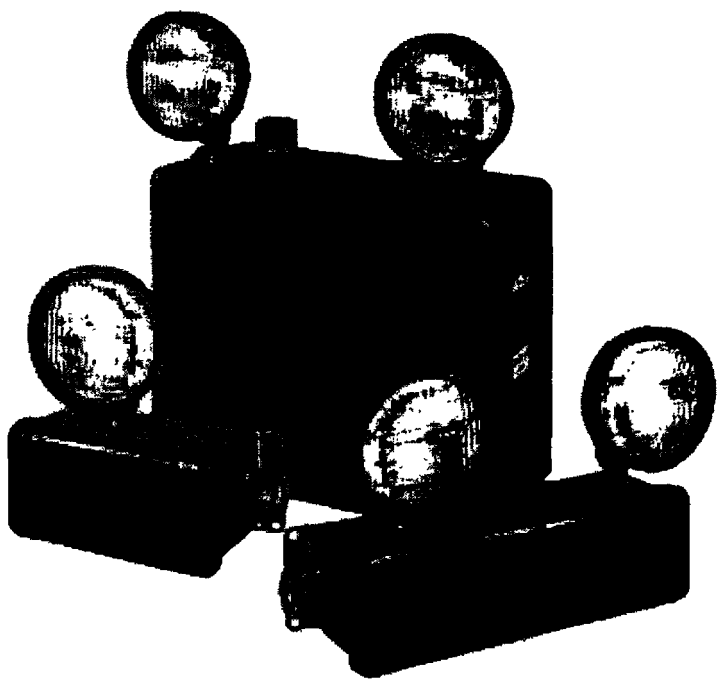
Type
N2LS283666

F2-30

N2LS™ Series Emergency Lighting: Enclosed and Gasketed

Non-Metallic Emergency Lighting Systems with Remote or Direct Mounted Lamps.



Applications

- Enclosed and gasketed, non-metallic emergency lighting system suitable for use in areas where flammable gases or vapors may become present due to abnormal, unusual or accidental conditions defined by NEC as Class I, Div. 2, Groups B, C and D and Class I, Zone 2, Group II B + H_2.
- Typical applications include manufacturing plants, refineries, petrochemical and chemical plants, waste and sewerage treatment facilities, food processing facilities, and other industrial manufacturing or process facilities subject to wet or corrosive conditions.
- Non-hazardous areas where dirt, dust or corrosion would reduce life of ordinary emergency lighting systems.

Features

- Certified for use in Class I, Div. 2, Groups B, C, D; Class I, Zone 2, Group II B + H_2 Hazardous Locations.
- Enclosures are Type 3R (raintight) rated and suited for operation in highly corrosive and wet locations.
- The electronics consist of a solid-state charger, transfer circuit and low voltage battery disconnect circuit.
- The test switch and AC "On" indicator light are mounted on the system housing utilizing a neoprene "O-ring" gasket to seal out moisture and liquids.
- Capacity is sufficient for the connection of 36 or 72 output Watts (maximum).
- Housing provisions allow for the attachment of single or dual, 8 or 12 Watt halogen sealed beam heads (Wattage cannot exceed unit capacity.)
- Provides 90 minutes of emergency operation.
- The solid-state charger maintains battery at full charge.
- Upon failure or 35% dip of utility voltage (AC), the DC emergency lighting load is connected to the battery.
- During emergency operation, automatic battery protection from deep discharge damage is provided by a low-voltage battery disconnect (LVD) circuit.
- Upon restoration of normal power, the charger will begin a recharge cycle. It will bring the battery to full capacity within acceptable UL time standards.
- A pilot light indicates the presence of AC line voltage, and a test switch is provided for checking transfer operation.
- A universal transformer allows operation on 120, 220, 240 or 277 VAC 50/60HZ. lines.
- Emergency power source is a sealed cell, lead acid, maintenance-free battery suited for harsh temperature environments of 0° to 40°C.
- 15 amp fuse provided as standard.
- Expected life is 10 years.
- Remote lamp head assemblies (one or two) are available for mounting of lamp heads away from main power supply system.
- Time delay relay (15 min.) provided as standard; allows time for HID lighting to reach desired illumination levels.

Standard Materials

- Fixture - Compression molded, fiberglass reinforced polyester (FRP), with continuous silicone gasket and FRP mounting feet.
- Remote - Specially formulated fiberglass reinforced polyester with low surface resistivity that will not hold a static charge. Stainless steel screws hold covers to bodies, and stainless steel mounting feet.
- Gaskets under pilot light and push to test switch are neoprene.
- Gasket between remote cover and body is neoprene.
- Hubs - Glass filled polyester with zinc plated steel insert.
- Lamphead - Noryl® thermoplastic.

Compliances

- Class I, Div. 2, Groups B, C and D.
- Class I, Zone 2, Group IIB + H_2.
- UL Standard: 924.
- NFPA 101 Life Safety Code.
- NEMA 3R.

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IP7_034818

F2-31

Class I, Div. 2
Groups B,C,D
NEMA 3R

UL Standard: 924
NFPA 101 Life Safety Code

N2LS™ Series Emergency Lighting: Enclosed and Gasketed

Non-Metallic Emergency Lighting Systems with Remote or Direct Mounted Lamps.

Ordering Information:

Order using catalog numbering guide below or select catalog number from pages F2-31 and F2-32.

CATALOG NUMBERING GUIDE FOR N2LS

N2LS™	2	8	36	6
SERIES: N2LS - Emergency Lighting System	No. OF DIRECT MOUNT LAMPS: 0 - None 1 - One 2 - Two	WATTAGE PER LAMP: 8 - 8 Watt 12 - 12 Watt N - No Direct Mounted Fixture	WATTAGE CAPACITY: 36 - 36 Watt 72 - 72Watt	LAMP VOLTAGE: 6 - 6 VDC 12 - 12 VDC

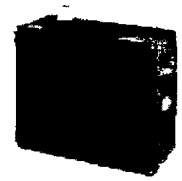
Emergency Lighting System With Two Direct Mount Lamps

Number of Lamps	Watts Per Lamp	Lamp Voltage (DC)	Wattage Capacity	Hub Size	Input Voltage*	Frequency	Weight lbs.	Catalog Number
2	8	6	36	3/4"	120-277	50/60HZ.	19.5	N2LS28366
2	8	12	36	3/4"	120-277	50/60HZ.	19.5	N2LS283612
2	8	6	72	3/4"	120-277	50/60HZ.	19.5	N2LS28726
2	8	12	72	3/4"	120-277	50/60HZ.	19.5	N2LS287212
2	12	6	36	3/4"	120-277	50/60HZ.	19.5	N2LS212366
2	12	12	36	3/4"	120-277	50/60HZ.	19.5	N2LS2123612
2	12	6	72	3/4"	120-277	50/60HZ.	19.5	N2LS212726
2	12	12	72	3/4"	120-277	50/60HZ.	19.5	N2LS2127212

Emergency Lighting System With One Direct Mount Lamp

Number of Lamps	Watts Per Lamp	Lamp Voltage (DC)	Wattage Capacity	Hub Size	Input Voltage*	Frequency	Weight lbs.	Catalog Number
1	8	6	36	3/4"	120-277	50/60HZ.	18.5	N2LS18366
1	8	12	36	3/4"	120-277	50/60HZ.	18.5	N2LS183612
1	8	6	72	3/4"	120-277	50/60HZ.	18.5	N2LS18726
1	8	12	72	3/4"	120-277	50/60HZ.	18.5	N2LS187212
1	12	6	36	3/4"	120-277	50/60HZ.	18.5	N2LS112366
1	12	12	36	3/4"	120-277	50/60HZ.	18.5	N2LS1123612
1	12	6	72	3/4"	120-277	50/60HZ.	18.5	N2LS112726
1	12	12	72	3/4"	120-277	50/60HZ.	18.5	N2LS1127212

Emergency Lighting System Without Direct Mount Lamps



Output Voltage (DC)	Wattage Capacity	Hub Size	Input Voltage*	Frequency	Weight lbs.	Catalog Number
6	36	3/4"	120-277	50/60HZ.	17.5	N2LS0N366
12	36	3/4"	120-277	50/60HZ.	17.5	N2LS0N3612
6	72	3/4"	120-277	50/60HZ.	17.5	N2LS0N726
12	72	3/4"	120-277	50/60HZ.	17.5	N2LS0N7212

* Input voltage is 120, 220, 240 and 277

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IP7_034819

Type FL
GAM671L-MT 1/2
W/GSF20, GPWB1
Q-11

Areamaster™ 250/400

Integrally ballasted floodlights for 400W, 250W, 150W, 100W, or 70W high pressure sodium lamps; 400W, 250W, or 175W metal halide lamps; 400W, 320W, 250W, or 200W pulse start metal halide and 400W, 250W, or 175W mercury vapor lamps. For general, marine, and Class I, Div. 2, Groups A, B, C and D hazardous locations.

D

Ordering Information

Lamp	Line Voltage	For General Duty: Yoke Mount Catalog Number♦	For General Duty: Slip-Fit Mount‡ Catalog Number♦	For Class 1, Div. 2 Classified Duty and Marine: Yoke Mount Catalog Number*	T Numbers and Temperatures ⊕: T Rating	Ambient Temperature °C	T Rating Temperature Range
High Pressure Sodium							
400W HPS	120-277◊	G-AM771L-MT	G-AM775L-MT	G-AM771L-MT-I/2	350°C	40°	326-350°C
400W HPS	480	G-AM771L-48	G-AM775L-48	G-AM771L-48-I/2	350°C	40°	326-350°C
250W HPS	120-277◊	G-AM671L-MT	G-AM675L-MT	G-AM671L-MT-I/2	T2A	40°	261-280°C
250W HPS	480	G-AM671L-48	G-AM675L-48	G-AM671L-48-I/2	T2A	40°	261-280°C
150W HPS	120-277◊●	———	———	G-AM471L-MT-I/2	T2C	40°	230-216°C
150W HPS	480●	———	———	G-AM471L-48-I/2	T2C	40°	230-216°C
100W HPS	120-277◊●	———	———	G-AM371L-MT-I/2	T3	40°	181-200°C
100W HPS	480●	———	———	G-AM371L-48-I/2	T3	40°	181-200°C
70W HPS	120-277◊●	———	———	G-AM271L-MT-I/2	T3C	40°	136-160°C
70W HPS	480●	———	———	G-AM271L-48-I/2	T3C	40°	136-160°C
Metal Halide							
400W MH	120-277◊	G-AM771H-MT	G-AM775H-MT	G-AM771H-MT-I/2	325°C	40°	301-325°C
400W MH	480	G-AM771H-48	G-AM775H-48	G-AM771H-48-I/2	325°C	40°	301-325°C
250W MH	120-277◊	G-AM671H-MT	G-AM675H-MT	G-AM671H-MT-I/2	T2A	40°	261-280°C
250W MH	480	G-AM671H-48	G-AM675H-48	G-AM671H-48-I/2	T2A	40°	261-280°C
175W MH	120-277◊	G-AM571H-MT	G-AM575H-MT	G-AM571H-MT-I/2	T2C	40°	216-230°C
175W MH	480	G-AM571H-48	G-AM575H-48	G-AM571H-48-I/2	T2C	40°	216-230°C
Pulse Start Metal Halide●							
400W PSMH	120-277◊	G-AM771P-MT	G-AM775P-MT	———	—	—	———
400W PSMH	480	G-AM771P-48	G-AM775P-48	———	—	—	———
320W PSMH	120-277◊	G-AM3271P-MT	G-AM3275P-MT	———	—	—	———
320W PSMH	480	G-AM3271P-48	G-AM3275P-48	———	—	—	———
250W PSMH	120-277◊	G-AM671P-MT	G-AM675P-MT	———	—	—	———
250W PSMH	480	G-AM671P-48	G-AM675P-48	———	—	—	———
200W PSMH	120-277◊	G-AM2071P-MT	G-AM2075P-MT	———	—	—	———
200W PSMH	480	G-AM2071P-48	G-AM2075P-48	———	—	—	———
Mercury Vapor							
400W MV	120-277◊	G-AM771M-MT	G-AM775M-MT	G-AM771M-MT-I/2	350°C	40°	326-350°C
400W MV	480	G-AM771M-48	G-AM775M-48	G-AM771M-48-I/2	350°C	40°	326-350°C
250W MV	120-277◊	G-AM671M-MT	G-AM675M-MT	G-AM671M-MT-I/2	325°C	40°	301-325°C
250W MV	480	G-AM671M-48	G-AM675M-48	G-AM671M-48-I/2	325°C	40°	301-325°C
175W MV	120-277◊	G-AM571M-MT	G-AM575M-MT	G-AM571M-MT-I/2	T2B	40°	231-260°C
175W MV	480	G-AM571M-48	G-AM575M-48	G-AM571M-48-I/2	T2B	40°	231-260°C

NOTE: For Zone 2 Areamaster™ 250/400, See Catalog Section F1.

◊ Ballast has primary taps for 120V, 208V, 240V, and 277V. ‡Slip-fits 2" or 2-1/2" pipe-size tenons. ♦Add suffix E to catalog number if provision for quartz emergency lamp is desired. Furnished with socket installed and pre-wired. * Quartz emergency lamp not available for Class I, Div. 2 fixtures. Classified duty floodlights have 1/2" N.P.T tapped hub for power entry. Use 90° supply wire. ● Consult factory for elevated ambient suitability. ⊕ Consult Factory for Class I Div. 2 information.● For Hot Restrike Option, add suffix –R.

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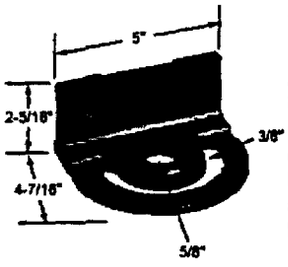
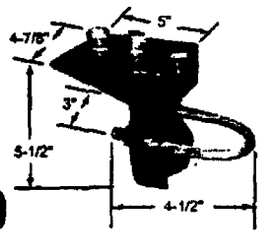
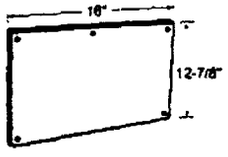
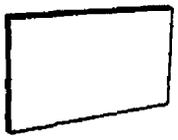
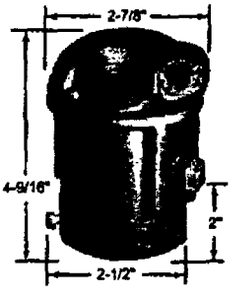
IP7_034820

Areamaster™ 250/400

Integrally ballasted floodlights for 400W, 250W, 150W, 100W, or 70W high pressure sodium lamps; 400W, 250W, or 175W metal halide lamps; 400W, 320W, 250W, or 200W pulse start metal halide and 400W, 250W, or 175W mercury vapor lamps. For general, marine, and Class I, Div. 2, Groups A, B, C and D hazardous locations.

Mounting Fittings and Accessories

Dimensions	Description	Cat. No.
	**Crossarm Mounting Bracket** Has 180° horizontal adjustment—degree marked. Facilitates mounting floodlight to crossarm or other flat surface, or to G-AM-8-WB. Includes floodlight yoke bolts. Malleable iron, zinc plated, chromate sealed, architectural bronze POLYESTER finish.	G-AM-8-CA
	**Pipe or Wall Mount Bracket** Used with G-AM-8-CA. Clamps to 1" to 2-1/2" pipe, vertical or horizontal, or mounts on flat surfaces. Includes U-bolt and crossarm bracket bolts. Malleable iron, zinc plated, chromate sealed, with architectural bronze POLYESTER finish.	G-AM-8-WB
	**Vandal Shield** UV stabilized polycarbonate, with installation hardware and instructions.	G-AM-6-VS
	**Replacement Lens**	604249003

Dimensions	Description	Cat. No.
	**Poletop Slip-Fitter** Slip-fits 1-1/2" or 2" pipe size poletop tenons. Includes floodlight yoke bolts, 3 locking bolts, and cord grip. Body is malleable iron-zinc plated, chromate sealed, with cast aluminum cap. Assembly has architectural bronze POLYESTER finish.	G-SF20
	**Locking-Type Photocontrol Receptacle** For NEMA type photocontrol, with installation hardware and instructions. Should not be mounted on Class I, Division 2 units.	G-1PCR
	**Top Visor** Easy to install with hardware supplied. Aluminum, with architectural bronze POLYESTER finish.	G-AM-6-V
	Replacement Lens Frame Assembly (Complete with Lens)	59607383002

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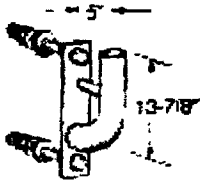
Floodlight Mounting Brackets for Single or Multiple Installation on Walls, Wood, or Metal Poles

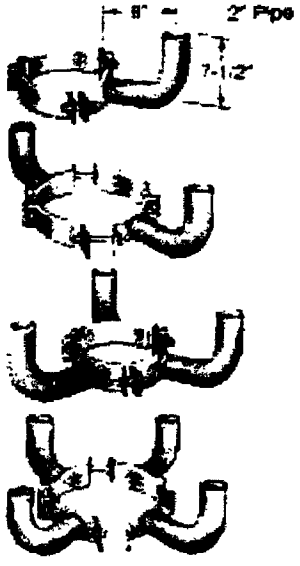
Dimensions	Description	Catalog Number



Wood Pole or Wall Mounting Bracket

For Floodlights with 2" Slip-Fitter, or will mount G-PB Series brackets with floodlights. Complete with two 13"-long bolts, washers, and nuts. Red oxide prime coat finish.

G-PWB-1

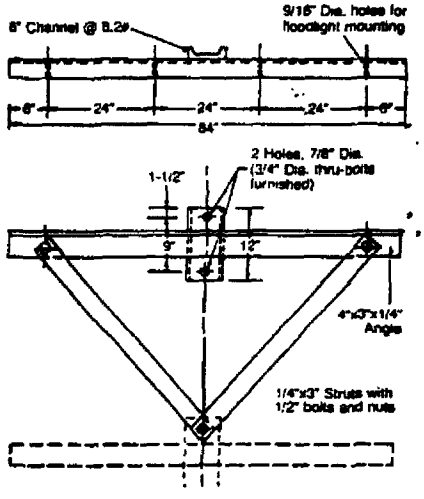


Wood Pole Clamp Brackets

Pole clamping floodlight mounting brackets constructed of 2" steel pipe. Furnished complete with clamping bolts and nuts. Has red oxide primer coat finish.
For 1 to 3 floodlights—Fits 6" to 9" poles
For 4 floodlights—Fits 9" to 12" poles.

Bracket	Cat. No.
1 Arm	G-PCB-1
2 Arm	G-PCB-2
3 Arm	G-PCB-3
4 Arm	G-PCB-4

C



Wood Pole Crossarm Lite Mount Bracket

Mounting arm made of rugged angular steel stock with 1/4" supporting struts. Has hot-dipped galvanized finish. Furnished with all nuts and bolts to assemble and install bracket to wood pole.

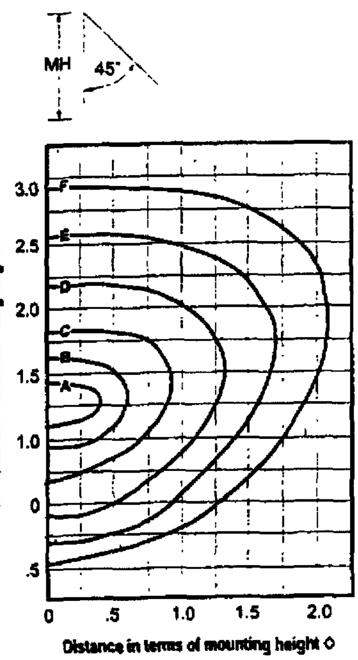
4-Lite:
G-PCAB-4

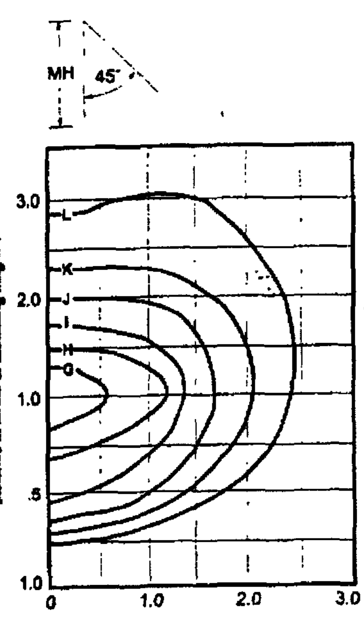
Appleton
7770 N. Frontage Road
Skokie, Illinois 60077

Photometric Data: Areamaster™ 250/400

Integrally ballasted floodlights for 400W, 250W, 150W, 100W, or 70W high pressure sodium lamps; 400W, 250W, or 175W metal halide lamps; 400W, 320W, 250W, or 200W pulse start metal halide and 400W, 250W, or 175W mercury vapor lamps. For general, marine, and Class I, Div. 2, Groups A, B, C and D hazardous locations.

Typical Footcandle Values ◆





Mtg. Ht.	Ft. Cdles for Iso-Footcandle Lines A	B	C	D	E	F
400W HPS						
60'	3.27	2.74	1.82	0.92	0.37	0.18
50'	4.74	4.00	2.90	1.37	0.52	0.27
40'	7.65	6.28	4.38	2.27	0.82	0.43
30'	13.10	10.92	7.83	3.47	1.45	0.77
20'	28.22	25.55	17.37	7.28	3.46	1.82
400W MH						
60'	2.32	1.66	1.00	0.58	0.33	0.17
50'	3.32	2.32	1.49	0.76	0.48	0.25
40'	5.48	3.62	2.32	1.33	0.75	0.36
30'	9.79	7.80	3.98	2.16	1.33	0.68
20'	17.26	14.60	9.30	5.31	3.15	1.49
400W MV						
60'	1.30	1.02	0.69	0.46	0.28	0.19
50'	1.86	1.49	1.02	0.65	0.39	0.28
40'	2.98	2.32	1.52	1.04	0.63	0.43
30'	4.65	4.09	2.79	1.95	1.15	0.78
20'	11.25	9.49	6.70	4.37	2.42	1.58

For 400W PSMH multiply FC values by 1.29; for 320W PSMH use 0.97.

Mtg. Ht.	Ft. Cdles for Iso-Footcandle Lines G	H	I	J	K	L
70W HPS						
10'	10.00	5.00	2.50	1.00	0.50	0.25
20'	2.50	1.00	0.50	0.25	0.10	0.05
30'	1.00	0.50	0.25	0.10	0.05	0.02

For 100W HPS lamps, multiply FC values by 1.5. For 150W HPS lamps, multiply FC values by 2.5.

Mtg. Ht.	Ft. Cdles for Iso-Footcandle Lines A	B	C	D	E	F
250W HPS						
60'	1.96	1.64	1.09	0.55	0.22	0.11
50'	2.84	2.40	1.74	0.82	0.31	0.16
40'	4.58	3.76	2.62	1.36	0.49	0.26
30'	7.85	6.54	4.69	2.08	0.87	0.46
20'	16.90	15.30	10.40	4.36	2.07	1.09
250W MH						
60'	1.40	1.00	0.60	0.35	0.20	0.10
50'	2.00	1.40	0.90	0.46	0.29	0.15
40'	3.30	2.18	1.40	0.80	0.45	0.22
30'	5.90	4.70	2.40	1.30	0.80	0.41
20'	10.40	8.80	5.60	3.20	1.90	0.90
250W MV						
60'	.70	0.55	0.37	0.25	0.15	0.10
50'	1.00	0.80	0.55	0.35	0.21	0.15
40'	1.60	1.25	0.82	0.56	0.34	0.23
30'	2.80	2.20	1.50	1.05	0.62	0.42
20'	6.05	5.10	3.60	2.35	1.30	0.85

For 175W MH lamps, multiply FC values by 0.68. For 175W PSMH Lamps 0.85; for 200W PSMH use 1.03; for 250W PSMH use 1.22.

For 175W MV lamps, multiply FC values by 0.68.

◇ (i.e., ratio of distance to height. Example: @ 20' mounting height, 1 means 20'; 2 means 40', etc. ◆ Photometric charts available on request.

Appleton
7770 N. Frontage Road
Skokie, Illinois 60077

Bulb	Base	LET	OP	MOL	LCL	Order Code	Description	ANSI Ballast Type	Case Qty.	Rated Avg. Life Hours	Lumens Initial	Lumens Mean	Color Temp. K	CRI	Additional Information	Footnotes
ECOLUX® HIGH PRESSURE SODIUM LAMPS (TCLP COMPLIANT)																
70 WATTS																
ED23.5	Mog	O	U	7.75	5	45760	LU70/ECO	S62	12	24000 +	6400	5450	1900	22	Clear, TCLP Compliant	
100 WATTS																
ED23.5	Mog	O	U	7.75	5	45761	LU100/ECO	S54	12	24000 +	9500	8550	2000	22	Clear, TCLP Compliant	
150 WATTS																
ED23.5	Mog	O	U	7.75	5	45762	LU150/55/ECO	S55	12	24000 +	16000	14400	2000	22	Clear, TCLP Compliant	
200 WATTS																
ED18	Mog	O	U	9.75	5.75	45763	LU200/ECO	S66	12	24000 +	22000	19800	2100	22	Clear, TCLP Compliant	
250 WATTS																
ED18	Mog	O	U	9.75	5.75	45764	LU250/ECO	S50	12	24000 +	28000	27000	2100	22	Clear, TCLP Compliant	
400 WATTS																
ED18	Mog	O	U	9	5.75	45765	LU400/ECO	S51	12	24000 +	51000	45000	2100	22	Clear, TCLP Compliant	
DELUXE LUCALOX® HIGH PRESSURE SODIUM LAMPS																
70 WATTS																
B17	Med	O	U	5.5	3.5	16611	LU70/DX/MED	S62	6	10000	3800	3040	2200	65	Clear, Improved CRI	
150 WATTS																
B17	Med	O	U	5.75	3.5	18094	LU150/DX/MED	S54	6	15000	10500	9135	2200	65	Clear, Improved CRI	
[illegible]5	Mog	O	U	7.75	5	18092	LU150/55/DX	S55	12	15000	10500	9135	2200	65	Clear, Improved CRI	
[illegible] WATTS																
ED18	Mog	O	U	9.75	5.75	11785	LU250/DX	S50	12	15000	22500	20700	2200	65	Clear, Improved CRI	
400 WATTS																
ED28	Mog	O	U	9	5.18	19650	LU400/DX	S51	12	15000	37400	34400	2200	70	Clear, Improved CRI	
E-Z LUX® HIGH PRESSURE SODIUM LAMPS (MERCURY RETROFIT)																
150 WATTS																
ED28	Mog	O	U	9	5	49943	LUH150/EZ	H39	12	13000	12500	12000	1900	22	Clear, Energy-saving Retrofit for 175W Mercury	
215 WATTS																
ED28	Mog	O	U	9	5	49939	LUH215/EZ	H37	12	12000	20200	18600	1900	22	Clear, Energy-saving Retrofit for 250W Mercury	
360 WATTS																
BT37	Mog	O	U	11.31	7.12	18012	LUH360/EZ	H33	6	24000	45000	40500	2100	25	Clear, Energy-saving Retrofit for 400W Mercury	
SOX LOW PRESSURE SODIUM LAMPS																
18 WATTS																
T16	BY22d	E		8.5	5.37	21294	SOX18	L69	16	18000	1800	1570	1800	0	Clear, Horizontal Burn ±20° or Vertical Base Up ±15°	
35 WATTS																
T16	BY22d	E		12.25	7.25	21296	SOX35	L70	16	18000	4600	4000	1800	0	Clear, Horizontal Burn ±20° or Vertical Base Up ±15°	
55 WATTS																
[illegible]	BY22d	E		16.75	9.5	21297	SOX55	L71	16	18000	7650	6655	1800	0	Clear, Horizontal Burn ±20° or Vertical Base Up ±15°	
90 WATTS																
T21	BY22d	E		20.75	11.5	21298	SOX90	L72	9	16000	12750	11095	1800	0	Clear, Horizontal Burn ±20°	

PRODUCT INFORMATION (CONTINUED)

GE I-LINE MULTI-VAPOR® LAMPS (pg 3-15)

- Convert mercury sockets to crisp, white metal halide light
- More light, better color, energy cost savings for mercury users
- 40%-100% more light than existing mercury lamps
- Operate on standard CW and CWA mercury ballasts and auxiliary equipment

GE SAF-T-GARD® MULTI-VAPOR LAMPS (MVT) (pg 3-15)

- Special self-extinguishing feature prevents exposure to harmful UV in case outer bulb is punctured or broken; lamp turns off within 15 minutes
- Meets requirements of Federal Standard 21CFR1040.30
- Saf-T-Gard® I-line lamps convert mercury sockets to crisp, white metal halide light
- Saf-T-Gard® I-line lamps operate on standard mercury ballasts and auxiliary equipment
- Uses: Industrial, commercial, gymnasiums, sports complexes, especially where open fixtures are used and risk of outer bulb breakage is possible

GE ARCSTREAM™ METAL HALIDE LAMPS (pg 3-15)

- Compact size, white light, excellent color
- Precise optical control delivers a concentrated beam of light right where it's needed
- Variety of color temperatures (3,000K - 6,000K)
- AR64: ideal for long-range projection and sports lighting applications
- Uses: Ideal for retail and commercial display lighting, floodlighting, accent/highlighting

GE LUCALOX® HIGH PRESSURE SODIUM LAMPS (pg 3-15 to 3-17)

- Very high efficacy/low operating cost
- Superior lumen maintenance – over 90% @ 50% of life
- Very long life – 24,000+ hours
- Universal burn – can be operated in any position without affecting performance
- Warm color
- For open or enclosed fixtures
- Uses: Industrial, roadway, security, floodlighting

GE DOUBLE-ENDED LUCALOX® LAMPS (/TD) (pg 3-17)

- Compact tubular design fits compact fixtures for excellent optical control
- High efficacy, lumen maintenance and long life of standard Lucalox® HPS

GE STANDBY LONGLIFE LUCALOX® LAMPS (/SBY) (pg 3-17)

- Extra arc tube provides light instantly after momentary power interruption, and will increase to 80% light output in 1-2 minutes
- Dual arc tubes provide 40,000 hour rated life
- Operates on standard HPS ballasts and auxiliary equipment
- Uses: Industrial, roadway, security, and hard-to-reach sockets

GE ECOLUX® NC "NON-CYCLING" HIGH PRESSURE SODIUM LAMPS (/ECO/NC) (pg 3-17)

- Low mercury. Passes TCLP, which can lower disposal costs.
- Non-cycling feature makes locating and replacing end-of-life lamps quick and easy
- Lead-free base
- High efficacy/low operating cost
- 6%-11% higher initial lumens than standard HPS in 100W and 400W versions
- Long life - 24,000 hours
- Open or enclosed fixtures
- Uses: Industrial, roadway, security

GE ECOLUX® HIGH PRESSURE SODIUM LAMPS (/ECO) (pg 3-18)

- Lead-free base. Passes TCLP, which can lower disposal costs.

GE DELUXE LUCALOX® HIGH PRESSURE SODIUM LAMPS (pg 3-18)

- High efficacy, lumen maintenance and long life of standard Lucalox® HPS
- High color rendering (65-70CRI), much better than standard HPS
- Blends well with incandescent and standard HPS sources
- Operates on standard HPS ballasts and auxiliary equipment
- Uses: Storage rooms, industrial facilities, offices, gymnasiums, malls, parks, building floodlighting

GE E-Z LUX® HIGH PRESSURE SODIUM LAMPS (pg 3-18)

- Direct replacement for mercury lamps on mercury ballasts
- More efficient, 37-114% more lumens and 10-14% fewer watts than mercury lamps they replace
- Uses: General lighting, roadway
- See operating notes for further information

GE SOX LOW PRESSURE SODIUM LAMPS (pg 3-18)

- Highest luminous efficacy for general, not for color-critical lighting
- Monochromatic, yellow color (589nm)

GE MERCURY LAMPS (pg 3-19)

- Long life and good efficacy
- Phosphor coated Deluxe lamps provide good color rendering(50CRI)
- Uses: Industrial, roadway, landscapes, residential and commercial security, parking lots

GE SAF-T-GARD® MERCURY LAMPS (pgs 3-19 and 3-20)

- Special self-extinguishing feature prevents exposure to harmful UV in case outer bulb is punctured or broken; lamp turns off within 15 minutes
- Meets requirements of Federal Standard 21 CFR 1040.30
- See operating notes for further information

Bulb	Base	Watts	Nominal Length in.	Order Code	Description	Case Qty.	Rated Avg. Life Hours	Lumens Initial	Lumens Mean	Color Temp. K	CRI	Additional Information	Footnotes
F25T12 FOR T8 BALLASTS													
T12	Medium Bipin (G13)	25	48	11439	F25T12/SP30	30	20000	2300	2140	3000	70	RE 730 Phosphor	
				11440	F25T12/SP35	30	20000	2300	2140	3500	73	RE 735 Phosphor	
				11442	F25T12/SP41	30	20000	2300	2140	4100	72	RE 741 Phosphor	
T8 ECOLUX® LAMPS													
T8 ECOLUX® — TCLP COMPLIANT													
T8	Medium Bipin (G13)	32	48	26666	F32T8/SP30/ECO	36	20000	2850	2710	3000	78	RE 730 Phosphor, Ecolux® with Starcoat™	
				26667	F32T8/SP35/ECO	36	20000	2850	2710	3500	78	RE 735 Phosphor, Ecolux® with Starcoat™	
				26668	F32T8/SP41/ECO	36	20000	2850	2710	4100	78	RE 741 Phosphor, Ecolux® with Starcoat™	
				25611	F32T8/SPX30/ECO	36	20000	2950	2800	3000	86	RE 830 Phosphor, Ecolux® with Starcoat™	
				25612	F32T8/SPX35/ECO	36	20000	2950	2800	3500	86	RE 835 Phosphor, Ecolux® with Starcoat™	
				25613	F32T8/SPX41/ECO	36	20000	2950	2800	4100	86	RE 841 Phosphor, Ecolux® with Starcoat™	
T8 ECOLUX® XL EXTRA-LIFE													
T8	Medium Bipin (G13)	32	48	27616	F32T8/XL/SP30/ECO	36	24000	2850	2710	3000	78	RE 730 Phosphor, Ecolux® XL with Starcoat™	
				27617	F32T8/XL/SP35/ECO	36	24000	2850	2710	3500	78	RE 735 Phosphor, Ecolux® XL with Starcoat™	
				27618	F32T8/XL/SP41/ECO	36	24000	2850	2710	4100	78	RE 741 Phosphor, Ecolux® XL with Starcoat™	
				27619	F32T8/XL/SPX30/ECO	36	24000	2950	2800	3000	86	RE 830 Phosphor, Ecolux® XL with Starcoat™	
				27620	F32T8/XL/SPX35/ECO	36	24000	2950	2800	3500	86	RE 835 Phosphor, Ecolux® XL with Starcoat™	
				27621	F32T8/XL/SPX41/ECO	36	24000	2950	2800	4100	86	RE 841 Phosphor, Ecolux® XL with Starcoat™	
T8 MOD-U-LINE®													
T8	Medium Bipin (G13)	31	22.5	10479	F32T8/SP30/U/6	12	20000	2700	2565	3000	78	RE 730 Phosphor, 6" Spacing Between Legs, Starcoat™	
				23585	F32T8/SP35/U/6	12	20000	2700	2565	3500	78	RE 735 Phosphor, 6" Spacing Between Legs, Starcoat™	
				10480	F32T8/SP41/U/6	12	20000	2700	2565	4100	78	RE 741 Phosphor, 6" Spacing Between Legs, Starcoat™	
				41776	F31T8/SPX30/U	15	20000	2725	2500	3000	82	RE 830 Phosphor, 1⅝" Spacing Between Legs	
				10483	F32T8/SPX30/U/6	12	20000	2800	2630	3000	86	RE 830 Phosphor, 6" Spacing Between Legs, Starcoat™	
				41777	F31T8/SPX35/U	15	20000	2725	2500	3500	82	RE 835 Phosphor, 1⅝" Spacing Between Legs	
				10485	F32T8/SPX35/U/6	12	20000	2800	2630	3500	86	RE 835 Phosphor, 6" Spacing Between Legs, Starcoat™	
				41778	F31T8/SPX41/U	15	20000	2725	2500	4100	82	RE 841 Phosphor, 1⅝" Spacing Between Legs	
				10488	F32T8/SPX41/U/6	12	20000	2800	2630	4100	86	RE 841 Phosphor, 6" Spacing Between Legs, Starcoat™	
				10489	F32T8/SPX50/U/6	12	20000	2660	2510	5000	86	RE 850 Phosphor, 6" Spacing Between Legs, Starcoat™	
T8 8' LAMPS													
T8 8' STARCOAT™													
T8	Single Pin (Fa8)	59	96	23407	F96T8/SP30	24	15000	5800	5500	3000	78	RE 730 Phosphor, Starcoat™	
				23411	F96T8/SP35	24	15000	5800	5500	3500	78	RE 735 Phosphor, Starcoat™	
				23412	F96T8/SP41	24	15000	5800	5500	4100	78	RE 741 Phosphor, Starcoat™	
				23414	F96T8/SPX30	24	15000	5950	5650	3000	86	RE 830 Phosphor, Starcoat™	
				23415	F96T8/SPX35	24	15000	5950	5650	3500	86	RE 835 Phosphor, Starcoat™	
				23416	F96T8/SPX41	24	15000	5950	5650	4100	86	RE 841 Phosphor, Starcoat™	
				23575	F96T8/SPX50	24	15000	5950	5650	5000	86	RE 850 Phosphor, Starcoat™	
T8 8' STARCOAT™ XL EXTRA-LIFE													
T8	Single Pin (Fa8)	59	96	41889	F96T8/XL/SP30	24	18000	5800	5500	3000	78	RE 730 Phosphor, Starcoat™, Extra Life	
				41890	F96T8/XL/SP35	24	18000	5800	5500	3500	78	RE 735 Phosphor, Starcoat™, Extra Life	
				41891	F96T8/XL/SP41	24	18000	5800	5500	4100	78	RE 741 Phosphor, Starcoat™, Extra Life	
				41892	F96T8/XL/SPX30	24	18000	5950	5650	3000	86	RE 830 Phosphor, Starcoat™, Extra Life	
				41893	F96T8/XL/SPX35	24	18000	5950	5650	3500	86	RE 835 Phosphor, Starcoat™, Extra Life	
				41894	F96T8/XL/SPX41	24	18000	5950	5650	4100	86	RE 841 Phosphor, Starcoat™, Extra Life	
				45497	F96T8/XL/SPX50	24	18000	5950	5650	5000	86	RE 850 Phosphor, Starcoat™, Extra Life	

Means meets current Federal Minimum Efficiency Standards

For the most up-to-date product information see www.gelighting.com. To convert inches to millimeters multiply by 25.4.
All footnote references begin at the end of this section. Reduced Wattage. High Color Rendering.

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Will Call (801) 975-5553
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GSL ELECTRIC

HELPER COOLING TOWER SUBMITTALS

ENDURO SYSTEMS CABLE TRAY

FEBRUARY 2003

Codale Electric Supply
3150 South 900 West
Salt Lake City, UT 84119
(801) 975-7300 Phone
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Enduro
SYSTEMS, INC.
Composite Products Division

7100 Old Katy Road
Houston, TX
77024-2112
800.231.7271

LADDER-TYPE CABLE TRAY SPECIFICATION

1.0 Scope

1.1 The cable tray system shall conform to the material and fabrication requirements as per this specification.

2.0 Standards

2.1 The cable tray system shall conform to applicable sections of:

2.1.1 NEMA Standard FG-1 (latest edition)

2.1.2 National Electric Code (NEC)

2.1.3 ASTM E-84 (Class 1 Rating)

2.1.4 UL (Underwriters Laboratories, Inc.) Standards for Non- Metallic Cable Trays.

3.0 General

3.1 Tray Requirements

3.1.1 Tray widths 6" (152mm), 9" (229mm), 12"(305mm), 18" (457mm), 24" (610mm), 30" (762mm), and 36" (914mm).

3.1.2 Lengths (as required): 10 Ft. (3m),and 20 Ft. (6m).

3.1.3 Rung spacing (as required): 6" (152mm), 9.25" (235mm), 12" (305mm), and 18.5" (470mm).

3.1.4 Radius of fittings (as required): 12" (305mm), 24" (610mm), and 36" (914mm)

3.1.5 Resin Systems (as required): Isophthalic Polyester or Vinyl Ester.

3.2 Loading Requirements

3.2.1 There shall be three working load classifications of fiberglass cable tray based on 20 Ft. (6m) support span with a minimum safety factor of 1.5:

Class	Working Load
A	50 Lbs./Lineal Ft.
B	75 Lbs./Lineal Ft.
C	100 Lbs./Lineal Ft.

3.2.2 Span Support criteria shall be as specified (Reference the following table)

Support Span (Ft.)	Working Load in Lbs./Lineal Ft.		
	Class A	Class B	Class C
20	50	75	100
18	61	92	123
16	78	117	156
14	100	150	200
12	139	208	-
10	200	-	-

3.2.3 Nominal loading depth (as required): 2" (51mm), 3" (76mm), 5" (127mm), 7" (178mm) and 9" (229mm).

4.0 Materials

4.1 The glass fiber to resin content shall be maintained between 45 to 55 percent by weight in all pultruded components except flat sheet which shall be 35 to 45 percent; and, 25 to 45 percent by weight in all molded components.

4.2 All composite material shall have an ultraviolet light inhibiting chemical additive to resist UV degradation.

4.3 All composite material shall be fire retardant and have a flame spread rating of 25 or less (Class 1 Rating) when tested in accordance with ASTM E-84.

4.4 All pultruded products shall have a complete Nexus surfacing veil to provide maximum chemical and UV protection.

5.0 Construction

5.1 Straight section tray shall be fiberglass reinforced meeting all the requirements herein described.

5.1.1 The side rail members must turn in.

5.1.2 All rung to side member connections shall have both a mechanical and a chemical (adhesive) lock. The tray shall be assembled by the use of a locking pin made of fiberglass reinforced thermoplastic. The locking pin shall be inserted under pressure with a high strength, chemical resistant adhesive.

5.1.3 All bonded connections must be sanded to maximize adhesion and structural integrity.

5.1.4 The tray interior shall be clear of all projections or sharp objects.

5.1.5 All straight section lengths shall be pre-drilled to accept connector plates.

5.1.6 All cut ends and drilled holes (factory and field) shall be resin coated

5.2 Fittings are to be pre-fabricated and shall meet all the requirements herein described.

5.2.1 All fittings shall have a nominal 9.25" rung spacing.

5.2.2 All fittings shall be pre-drilled to accept connector plates.

5.2.3 All fittings shall be designed and installed so as to have the same load carrying capacity as the straight sections.

5.2.4 Rung to side member connections shall have both a mechanical and/or chemical (adhesive) lock. Fittings shall be assembled by use of a locking pin made of fiber- glass reinforced thermoplastic and/or a stainless steel rivet. The locking pin shall be inserted under pressure with a high strength chemical resistant adhesive.

• All radius 90° and 45° horizontal and vertical bends, all tee's and crosses for tray types using 6" (152mm), and most 4" (101mm) and 8" (202mm), C-channel members shall be of concentric curved molded design and made by resin transfer molding.

5.3 Connector Plates and Fasteners:

5.3.1 Connector plates shall be fiberglass and designed with sufficient strength so they may be installed between 0.2 and 0.3 of the length of the span from the support without derating the load carrying capacity of the tray.

5.3.2 Fasteners for connector plates shall be 3/8" (9.5mm) diameter Type 316 Stainless Steel, Monel, Silicon Bronze, or FRP studs & hex nuts as required.

5.4 Accessories

5.4.1 The manufacturer shall be capable of providing all necessary parts (i.e. clamps, support assemblies, etc.) for the installation of a complete fiberglass tray system.

6.0 Acceptable Manufacturer

6.1 The fiberglass ladder type cable tray system shall be manufactured - pultrusion, compression molded, resin transfer molded and/or fabricated by Enduro Composite Systems, of Houston, Texas USA.

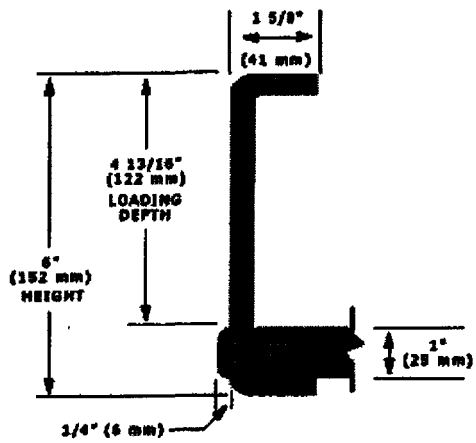
ENDURO SYSTEMS CABLE TRAY

CABLE TRAY TYPE
ELL6

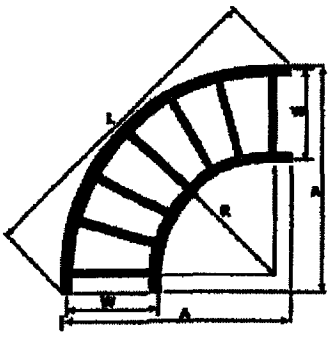
Class
20A/SF
3.0 Min.

Max. Span Support
20 Ft.
(6m)

Resin System
Polyester



ENDURO SYSTEMS CONCENTRIC CURVED MOLDED FITTINGS
90° HORIZONTAL MOLDED RADIUS BEND



Typical Catalog No:

EHB-(RD)-90-(W)-(R)

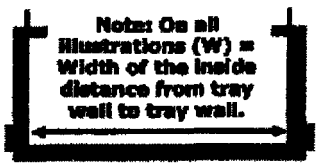
* Also available in 4" and 8" side rail configuration

** Also available in 4" side rail configuration.

† Also available in 8" side rail configuration.

Width	Dimension In. (mm)					
	12" (305) Radius		24" (610) Radius		36" (914) Radius	
	A	L	A	L	A	L
6 (152)	22 3/4 (578)	32 3/16 (818)	34 3/4** (383)	49 1/8 (1248)	46 3/4 (1187)	66 1/8 (1680)
9 (229))	25 3/4 (405)	36 7/16 (926)	37 3/4 (959)	53 3/8 (1356)	49 3/4 (1264)	70 3/8 (1787)
12 (305)	28 3/4 (405)	40 11/16 (1033)	40 3/4 (1035)	57 5/8 (1464)	52 3/4 (1340)	74 5/8 (1895)
18 (457)	34 3/4 (883)	49 1/8 (1248)	46 3/4*	66 1/8 (1680)	48 3/4 (1492)	83 1/8 (2111)

			(1187)			
24 (610)	40 3/4 (1035)	57 5/8 (1464)	42 3/4* (1340)	74 3/8 (1895)	64 3/4 (1645)	91 1/2 (2324)
30 (762)	46 3/4 (1187)	66 1/8 (1680)	58 3/4† (1492)	83 1/8 (2111)	NA	NA
36 (914)	52 3/4 (1340)	74 5/8 (1895)	64 3/4† (1645)	91 1/2 (2324)	NA	NA



ENDURO SYSTEMS CABLE TRAY STRAIGHT SECTION COVERS

FLAT COVER

INSTALLATION METHODS FOR FLAT COVER:

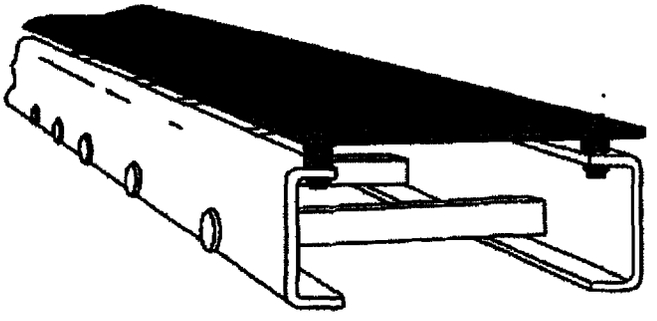
Thermoplastic Drive Rivets (Part NO. R-25) are the most economical method, but do require field drilling.

It is recommended rivets be installed on 24" centers along both side rails.

Cover Hold Down Clamps and Enduro Stand Offs allow cover to be removed for easy access to cables.

It is recommended to use seven pair at 1'6" on center per 10 Ft. length of cover.

Add ventilation height 2" for Flat Cover.

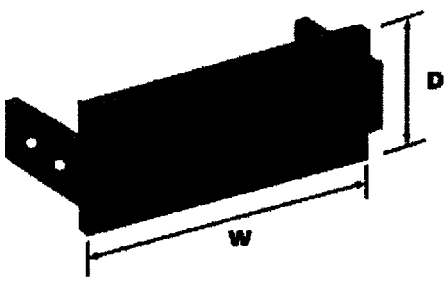


Tray Width In. (mm)	Flat cover for "C" tray types catalog no.	Wt/LF	Flat cover for "Z" tray types catalog no.	Wt./LF
6 (152)	EPC-06	0.57	EZC-06	0.95
9 (229)	EPC-09	0.86	EZC-09	1.24

12 (305)	EPC-12	1.14	EZC-12	1.52
18 (457)	EPC-18	1.71	EZC-18	2.09
24 (610)	EPC-24	2.28	EZC-10	2.66
30 (762)	EPC-30	2.85	EZC-30	3.23
36 (914)	EPC-36	3.42	NA	NA

CABLE TRAY ACCESSORIES

BLIND END



When ordering, substitute tray width for "W". For vinyl ester, substitute "V" for "P". 316SS fasteners are included.

Tray Depth Inches (mm)	Catalog Number
3 (76)	**EBE-3P-W**
4 (102)	**EBE-4P-W**
6 (152)	**EBE-6P-2**
8 (203)	**EBE-8P-W**
10 (254)	**EBE-10P-W**

CONCEPT® Wall-Mount Enclosures

Standard Sizes CONCEPT® Single-Door Wall-Mount Enclosures

Enclosure Catalog Number ANSI 61 Gray	Enclosure Catalog Number RAL 7035 Lt. Gray	Door Ga.	Body Ga.	Enclosure Size A x B x C inch	(millimeter)	*CONCEPT Panel Catalog Number	Panel Size D x E inch	(mm)	Mounting G x H inch	(mm)	Latches qty style	J inch	(mm)
C-SD12126	C-SD12126LG	16	16	12.00 x 12.00 x 6.00	(305 x 305 x 152)	C-P1212	10.20 x 10.20	(259 x 259)	10.50 x 10.50	(267 x 267)	1 Qturn.	6.00	(152)
C-SD16126	C-SD16126LG	16	16	16.00 x 12.00 x 6.00	(406 x 305 x 152)	C-P1612	14.20 x 10.20	(361 x 259)	14.50 x 10.50	(368 x 267)	1 Qturn	8.00	(203)
C-SD16166	C-SD16166LG	16	16	16.00 x 16.00 x 6.00	(406 x 406 x 152)	C-P1616	14.20 x 14.20	(361 x 361)	14.50 x 14.50	(368 x 368)	1 Qturn.	8.00	(203)
C-SD16206	C-SD16206LG	16	16	16.00 x 20.00 x 6.00	(406 x 508 x 152)	C-P2016	18.20 x 14.20	(462 x 361)	14.50 x 18.50	(368 x 470)	1 Qturn.	8.00	(203)
C-SD20166	C-SD20166LG	16	16	20.00 x 16.00 x 6.00	(508 x 406 x 152)	C-P2016	18.20 x 14.20	(462 x 361)	18.50 x 14.50	(470 x 368)	1 Qturn.	10.00	(254)
C-SD20206	C-SD20206LG	16	16	20.00 x 20.00 x 6.00	(508 x 508 x 152)	C-P2020	18.20 x 18.20	(462 x 462)	18.50 x 18.50	(470 x 470)	1 Qturn	10.00	(254)
C-SD24166	C-SD24166LG	16	16	24.00 x 16.00 x 6.00	(610 x 406 x 152)	C-P2416	22.20 x 14.20	(564 x 361)	22.50 x 14.50	(572 x 368)	1 Qturn.	12.00	(305)
C-SD24206	C-SD24206LG	16	16	24.00 x 20.00 x 6.00	(610 x 508 x 152)	C-P2420	22.20 x 18.20	(564 x 462)	22.50 x 18.50	(572 x 470)	1 Qturn.	12.00	(305)
†C-SD24246	†C-SD24246LG	14	16	24.00 x 24.00 x 6.00	(610 x 610 x 152)	C-P2424	22.20 x 22.20	(564 x 564)	22.50 x 22.50	(572 x 572)	2 Qturn.	5.00	(127)
C-SD16128	C-SD16128LG	16	16	16.00 x 12.00 x 8.00	(406 x 305 x 203)	C-P1612	14.20 x 10.20	(361 x 259)	14.50 x 10.50	(368 x 267)	1 Qturn.	8.00	(203)
C-SD16168	C-SD16168LG	16	16	16.00 x 16.00 x 8.00	(406 x 406 x 203)	C-P1616	14.20 x 14.20	(361 x 361)	14.50 x 14.50	(368 x 368)	1 Qturn.	8.00	(203)
C-SD16208	C-SD16208LG	16	16	16.00 x 20.00 x 8.00	(406 x 508 x 203)	C-P2016	18.20 x 14.20	(462 x 361)	14.50 x 18.50	(368 x 470)	1 Qturn	8.00	(203)
C-SD20168	C-SD20168LG	16	16	20.00 x 16.00 x 8.00	(508 x 406 x 203)	C-P2016	18.20 x 14.20	(462 x 361)	18.50 x 14.50	(470 x 368)	1 Qturn.	10.00	(254)
C-SD20208	C-SD20208LG	16	16	20.00 x 20.00 x 8.00	(508 x 508 x 203)	C-P2020	18.20 x 18.20	(462 x 462)	18.50 x 18.50	(470 x 470)	1 Qturn.	10.00	(254)
C-SD20248	C-SD20248LG	16	16	20.00 x 24.00 x 8.00	(508 x 610 x 203)	C-P2420	22.20 x 18.20	(564 x 462)	18.50 x 22.50	(470 x 572)	1 Qturn.	10.00	(254)
C-SD24168	C-SD24168LG	16	16	24.00 x 16.00 x 8.00	(610 x 406 x 203)	C-P2416	22.20 x 14.20	(564 x 361)	22.50 x 14.50	(572 x 368)	1 Qturn	12.00	(305)
C-SD24208	C-SD24208LG	16	16	24.00 x 20.00 x 8.00	(610 x 508 x 203)	C-P2420	22.20 x 18.20	(564 x 462)	22.50 x 18.50	(572 x 470)	1 Qturn.	12.00	(305)
†C-SD24248	†C-SD24248LG	14	16	24.00 x 24.00 x 8.00	(610 x 610 x 203)	C-P2424	22.20 x 22.20	(564 x 564)	22.50 x 22.50	(572 x 572)	2 Qturn.	5.00	(127)
†C-SD24308	†C-SD24308LG	14	16	24.00 x 30.00 x 8.00	(610 x 762 x 203)	C-P3024	28.20 x 22.20	(716 x 564)	22.50 x 28.50	(572 x 724)	2 Qturn.	5.00	(127)
†C-SD30208	†C-SD30208LG	14	16	30.00 x 20.00 x 8.00	(762 x 508 x 203)	C-P3020	28.20 x 18.20	(716 x 462)	28.50 x 18.50	(724 x 470)	2 Qturn.	5.00	(127)
†C-SD30248	†C-SD30248LG	14	16	30.00 x 24.00 x 8.00	(762 x 610 x 8.00)	C-P3024	28.20 x 22.20	(716 x 564)	28.50 x 22.50	(724 x 572)	2 Qturn.	5.00	(127)
†C-SD30308	†C-SD30308LG	14	14	30.00 x 30.00 x 8.00	(762 x 762 x 203)	C-P3030	28.20 x 28.20	(716 x 716)	28.50 x 28.50	(724 x 724)	2 Qturn.	5.00	(127)
†C-SD36248	†C-SD36248LG	14	16	36.00 x 24.00 x 8.00	(914 x 610 x 203)	C-P3624	34.20 x 22.20	(869 x 564)	34.50 x 22.50	(876 x 572)	2 Qturn.	5.00	(127)
†C-SD36308	†C-SD36308LG	14	14	36.00 x 30.00 x 8.00	(914 x 762 x 203)	C-P3630	34.20 x 28.20	(869 x 716)	34.50 x 28.50	(876 x 724)	2 Qturn	5.00	(127)
†C-SD36368	†C-SD36368LG	14	14	36.00 x 36.00 x 8.00	(914 x 914 x 254)	C-P3636	34.20 x 34.20	(869 x 869)	34.50 x 34.50	(876 x 876)	2 Qturn	5.00	(127)
C-SD161210	C-SD161210LG	16	16	16.00 x 12.00 x 10.00	(406 x 305 x 254)	C-P1612	14.20 x 10.20	(361 x 259)	14.50 x 10.50	(368 x 267)	1 Qturn.	8.00	(203)
C-SD161610	C-SD161610LG	16	16	16.00 x 16.00 x 10.00	(406 x 406 x 254)	C-P1616	14.20 x 14.20	(361 x 361)	14.50 x 14.50	(368 x 368)	1 Qturn.	8.00	(203)
C-SD162010	C-SD162010LG	16	16	16.00 x 20.00 x 10.00	(406 x 508 x 254)	C-P2016	18.20 x 14.20	(462 x 361)	14.50 x 18.50	(368 x 470)	1 Qturn.	8.00	(203)
C-SD201610	C-SD201610LG	16	16	20.00 x 16.00 x 10.00	(508 x 406 x 254)	C-P2016	18.20 x 14.20	(462 x 361)	18.50 x 14.50	(470 x 368)	1 Qturn.	10.00	(254)
C-SD202010	C-SD202010LG	16	16	20.00 x 20.00 x 10.00	(508 x 508 x 254)	C-P2020	18.20 x 18.20	(462 x 462)	18.50 x 18.50	(470 x 470)	1 Qturn.	10.00	(254)
C-SD202410	C-SD202410LG	16	16	20.00 x 24.00 x 10.00	(508 x 610 x 254)	C-P2420	22.20 x 18.20	(564 x 462)	18.50 x 22.50	(470 x 572)	1 Qturn.	10.00	(254)
C-SD241610	C-SD241610LG	16	16	24.00 x 16.00 x 10.00	(610 x 406 x 254)	C-P2416	22.20 x 14.20	(564 x 361)	22.50 x 14.50	(572 x 368)	1 Qturn.	12.00	(305)
C-SD242010	C-SD242010LG	16	16	24.00 x 20.00 x 10.00	(610 x 508 x 254)	C-P2420	22.20 x 18.20	(564 x 462)	22.50 x 18.50	(572 x 470)	1 Qturn	12.00	(305)
†C-SD242410	†C-SD242410LG	14	16	24.00 x 24.00 x 10.00	(610 x 610 x 254)	C-P2424	22.20 x 22.20	(564 x 564)	22.50 x 22.50	(572 x 572)	2 Qturn	5.00	(127)
†C-SD243010	†C-SD243010LG	14	16	24.00 x 30.00 x 10.00	(610 x 762 x 254)	C-P3024	28.20 x 22.20	(716 x 564)	22.50 x 28.50	(572 x 724)	2 Qturn	5.00	(127)
†C-SD302010	†C-SD302010LG	14	16	30.00 x 20.00 x 10.00	(762 x 508 x 254)	C-P3020	28.20 x 18.20	(716 x 462)	28.50 x 18.50	(724 x 470)	2 Qturn.	5.00	(127)
†C-SD302410	†C-SD302410LG	14	16	30.00 x 24.00 x 10.00	(762 x 610 x 254)	C-P3024	28.20 x 22.20	(716 x 564)	28.50 x 22.50	(724 x 572)	2 Qturn.	5.00	(127)
†C-SD303010	†C-SD303010LG	14	14	30.00 x 30.00 x 10.00	(762 x 762 x 254)	C-P3030	28.20 x 28.20	(716 x 716)	28.50 x 28.50	(724 x 724)	2 Qturn.	5.00	(127)
†C-SD362410	†C-SD362410LG	14	16	36.00 x 24.00 x 10.00	(914 x 610 x 254)	C-P3624	34.20 x 22.20	(869 x 564)	34.50 x 22.50	(876 x 572)	2 Qturn.	5.00	(127)
†C-SD363010	†C-SD363010LG	14	14	36.00 x 30.00 x 10.00	(914 x 762 x 254)	C-P3630	34.20 x 28.20	(869 x 716)	34.50 x 28.50	(876 x 724)	2 Qturn	5.00	(127)
†C-SD363610	†C-SD363610LG	14	14	36.00 x 36.00 x 10.00	(914 x 914 x 254)	C-P3636	34.20 x 34.20	(869 x 869)	34.50 x 34.50	(876 x 876)	2 Qturn.	5.00	(127)
†C-SD423610	†C-SD423610LG	14	14	42.00 x 36.00 x 10.00	(1067 x 762 x 254)	C-P4236	40.20 x 34.20	(1021 x 869)	40.50 x 34.50	(1029 x 876)	1 3 pt.	21.00	(533)
†C-SD482410	†C-SD482410LG	14	14	48.00 x 24.00 x 10.00	(1219 x 610 x 254)	C-P4824	46.20 x 22.20	(1173 x 564)	46.50 x 22.50	(1181 x 572)	1 3 pt.	24.00	(610)
†C-SD483610	†C-SD483610LG	14	14	48.00 x 36.00 x 10.00	(1219 x 762 x 254)	C-P4836	46.20 x 34.20	(1173 x 869)	46.50 x 34.50	(1181 x 876)	1 3 pt.	24.00	(610)
†C-SD603610	†C-SD603610LG	14	14	60.00 x 36.00 x 10.00	(1524 x 914 x 254)	C-P6036	58.20 x 34.20	(1478 x 869)	58.50 x 34.50	(1486 x 876)	1 3 pt.	30.00	(762)

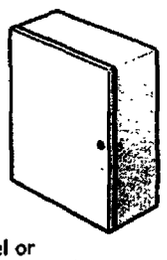
Millimeter dimensions ( ) are for reference only; do not convert metric dimensions to inch.

* Panels must be ordered separately. Optional zinc-plated CONCEPT panels available for most sizes. Optional NEMA size panels require conversion kit cat. number C-CPM4 (see General Accessories).

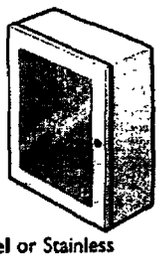
† Internal panel required to maintain UL/CSA rating.

The CONCEPT™ Enclosure Group Accessory Selection Guide

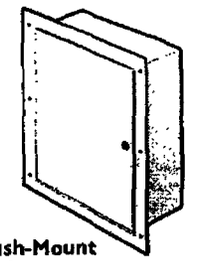
See *General Accessories: CONCEPT™ Enclosure Accessories, pp 11.66-11.71*



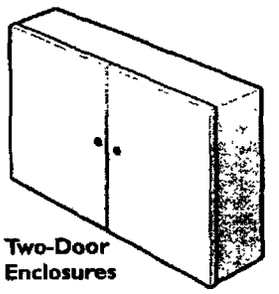
Steel or Stainless Steel Enclosures



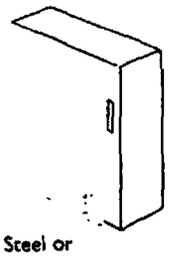
Steel or Stainless Steel Window-Door Enclosures



Flush-Mount Enclosures



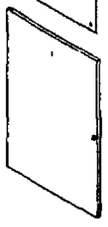
Two-Door Enclosures



Steel or Stainless Steel Disconnect Enclosures

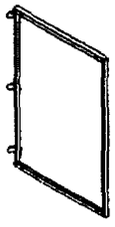
Internal Accessories

Steel Panel

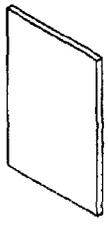


Swing-Out Panel

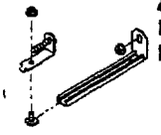
Panel Conversion Kit



Swing-Out Rack Frame



Dead Front Kit



Adjustable Mounting Kit

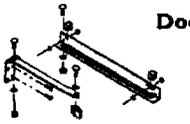
Mounting Channels

DIN Rail Kit

Grid Straps

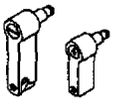
Rack Mounting Angles

Door Accessories

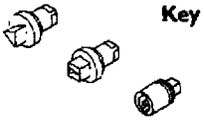


Door Stop Kit

Data Pocket



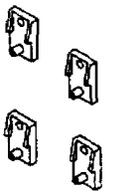
Handles and Latches



Key Inserts

External Accessories

Pole Mounting Kit

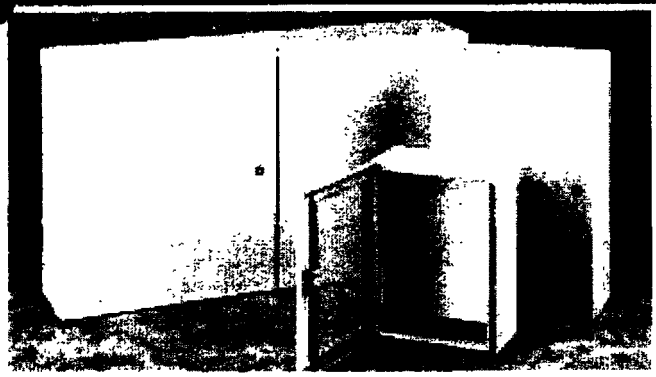


Mounting Foot Kit

C2588-1

CONCEPT® Wall-Mount Enclosures

Rev C January 2002



Application

CONCEPT® enclosures house and protect your sensitive electrical or electronic components from harsh, dirty environments. For use in installations where dirt, dust, oil, water, or other contaminants are present. Streamlined styling, flush latching, and an attractive durable finish complement any high-tech electronic equipment.

Construction

- Manufactured from 16 or 14 gauge steel (see tables)
- Seams continuously welded and ground smooth
- Minimum width body flange provides maximum door opening
- Body flange trough excludes liquids and contaminants
- Panel mounting studs fit optional CONCEPT panels and other accessories
- Mounting holes in back of body for direct mounting or for optional external mounting feet
- Hidden hinges for clean aesthetic appearance
- Doors are interchangeable and easily removable by pulling captive hinge pins
- Hinge mounting brackets for wire management or optional accessories
- Seamless foam-in-place one piece gasket provides oil-tight and dust-tight seal against contaminants
- Self-grounding latch system with double seal provides maximum protection against leakage
- Integral body grounding stud
- Provision for thermoplastic data pocket on solid door styles (right door on two-door models)
- Provision for optional door stop kit on solid door styles
- Furnished hardware kit consists of panel mounting nuts, grounding hardware, and sealing washers for wall mounting holes
- Installation instructions for enclosure and accessories are provided

CONCEPT® single-door enclosures with solid door

- Door bar on hinge side for wire management and grounding
- Additional door bar and center stiffener on larger doors for extra rigidity
- Quarterturn latches (U.S. patent 5,509,703 European patent pending), or a 3-point latch system on larger enclosures, furnished with flush slotted insert. Optional handles or inserts are available.

CONCEPT® single-door enclosures with window

- Clear polycarbonate window is mounted flush with door surface
- Quarterturn latch(es) include flush slotted insert. Optional handles are available.

CONCEPT® flush-mount enclosures

- Mounting frame extends completely around enclosure
- Quarterturn latch(es) furnished with slotted insert. Optional handles or inserts are available.

CONCEPT® two-door enclosures

- Overlapping door design (U.S. patent 5,465,528) provides full width access
- Door bars on each door for wire management and grounding
- 3-point latch system on right door furnished with flush slotted insert.
- Optional handles or inserts are available.

Finish

Two standard finishes are available: ANSI 61 gray polyester powder coating inside and out over phosphatized surfaces; or, textured light gray (RAL 7035) polyester powder coating inside and out. Optional panels are white.

Inddustry Standards

NOTE: Mounting feet required to maintain UL/CSA ratings. Some models also require internal panel; see order tables.

- ■ CONCEPT® solid single-door and flush-mount models
  UL508, File No. E61997, Type 4 and Type 12
  NEMA/EEMAC Type 4, Type 12, and Type 13
  CSA, File No. LR42186, Type 4 and Type 12
  VDE IP66
  IEC 60529, IP66
- ■ CONCEPT® single-door models with window
  UL508, File No. E61997, Type 4 and Type 12
  NEMA/EEMAC Type 4 and Type 12
  CSA, File No. LR42186, Type 4 and Type 12
  VDE IP66
  IEC 60529, IP66
- ■ CONCEPT® two-door models
  UL508, File No. E61997, Type 12
  NEMA/EEMAC Type 12
  CSA, File No. LR42186, Type 12
  VDE IP55
  IEC 60529, IP55

Accessories

See General Accessories: CONCEPT® Enclosure Accessories, pages 11.66-11.71

Adjustable Mounting Kit
Corrosion Inhibitors
Data Pocket (except window door style)
Dead Front Kit
DIN Rail Kit
Door Stop Kit (except window door style)
Electric Heater
Fan Cooling Products
Grid Straps
Handles and Latches
Key Inserts
Lighting Kits
Mounting Channels
Mounting Feet Kit
Panel Conversion Kit
Panels (See tables)
Panels, NEMA
Pole Mounting Kit
Rack Mounting Angles
Swing-Out Panel Kit
Swing-Out Rack Frames
Terminal Kit Assembly
Touch-Up Paint A-TPPY61 (ANSI61) or A-TPG7035 (RAL7035)
Wiring Duct

Modification Services Program

You can customize this product to your unique requirements by specifying from these options:

- Enclosure height, width, depth (not available on window door enclosures)
- Over 100 standard finish colors and textures
- Holes and cutouts in body, doors, subpanels
- Tapped holes, fasteners in enclosure or subpanel
- Mounting
- Doors
- Subpanels
- Structural changes
- Environmental control (louvers, fans, filters)
- Windows (not available on window door enclosures)
- Standard accessories

For details, see Modification Services at hoffmanonline.com.
To order, contact your local Hoffman sales representative.

Patents:
Cabinet with Overlapping Double Doors 5,465,528 (U.S.)
Combined Handle and Lock Unit
360,345 (U.S.)
DEM 9405854.7 (Germany)
Enclosure Latch 5,509,703 (U.S.)
Hinge System 5,666,695 (U.S.)

Other patents pending

CR260L Lighting Contactors

600 Volts Maximum 60 Hertz 20 Amperes Continuous

Fastrac™ Program items are printed in red type.

CR260L20L20NA02

❶ Select Number and Type of Poles and Enclosures

Number of Poles*			Pole Arrangement	CR260L Electrically Held Forms											
				Open Type		NEMA Type 1		NEMA Type 12		NEMA Type 4 Stainless Steel		NEMA Type 3R		NEMA Type 1 Flush Mount	
Total	NO	NC	Normally Open = O Normally Closed = X	Catalog Number Digits CR260L	List Price, GO-10MB	Catalog Number Digits CR260L	List Price, GO-10MB	Catalog Number Digits CR260L	List Price, GO-10MB	Catalog Number Digits CR260L	List Price, GO-10MB	Catalog Number Digits CR260L	List Price, GO-10MB	Catalog Number Digits CR260L	List Price, GO-10MB
2	2	—	O — — O	20CA**	$168.00	21CA**	$186.00	22CA**	$276.00	24CA**	$372.00	26CA**	$276.00	28CA**	$246.00
2	1	1	O — — X	20BB**	186.00	21BB**	204.00	22BB**	294.00	24BB**	374.00	26BB**	294.00	28BB**	264.00
3	3	—	O — O O	20DA**	186.00	21DA**	204.00	22DA**	294.00	24DA**	374.00	26DA**	294.00	28DA**	264.00
3	2	1	O — O X	20CB**	204.00	21CB**	222.00	22CB**	312.00	24CB**	392.00	26CB**	312.00	28CB**	282.00
4	4	—	O O O O	20EA**	240.00	21EA**	258.00	22EA**	348.00	24EA**	428.00	26EA**	348.00	28EA**	318.00
4	3	1	O O O X	20DB**	258.00	21DB**	276.00	22DB**	366.00	24DB**	446.00	26DB**	366.00	28DB**	336.00
4	2	2	X O O X	20CC**	258.00	21CC**	276.00	22CC**	366.00	24CC**	446.00	26CC**	366.00	28CC**	336.00
6	6	—	O O O O O O	20GA**	312.00	21GA**	372.00	22GA**	462.00	24GA**	542.00	26GA**	462.00	28GA**	432.00
6	5	1	O O O O O X	20FB**	330.00	21FB**	390.00	22FB**	480.00	24FB**	560.00	26FB**	480.00	28FB**	450.00
6	4	2	O O O O X X	20EC**	330.00	21EC**	390.00	22FC**	480.00	24EC**	560.00	26EC**	480.00	28EC**	450.00
6	3	3	O O O X X X	20DD**	330.00	21DD**	390.00	22DD**	480.00	24DD**	560.00	26DD**	480.00	28DD**	450.00
8	8	—	O O O O O O O O	20JA**	426.00	21JA**	486.00	22JA**	576.00	24JA**	656.00	26JA**	576.00	28JA**	546.00
8	7	1	O O O O O O O X	20HB**	444.00	21HB**	504.00	22HB**	594.00	24HB**	674.00	26HB**	594.00	28HB**	564.00
8	6	2	O O O O O O X X	20GC**	444.00	21GC**	504.00	22GC**	594.00	24GC**	674.00	26GC**	594.00	28GC**	564.00
8	5	3	X O O O O X X X	20FD**	444.00	21FD**	504.00	22FD**	594.00	24FD**	674.00	26FD**	594.00	28FD**	564.00
8	4	4	X X O O O O X X	20EE**	444.00	21EE**	504.00	22EE**	594.00	24EE**	674.00	26EE**	594.00	28EE**	564.00
10	10	—	O O O O O O O O O O	20LA**	498.00	21LA**	558.00	22LA**	648.00	24LA**	714.00	26LA**	648.00	28LA**	618.00
10	8	2	O O O — O O O X X X	20JC**	516.00	21JC**	576.00	22JC**	666.00	24JC**	732.00	26JC**	667.00	28JC**	636.00
10	6	4	O O O — O O X X X X	20GE**	516.00	21GE**	576.00	22GE**	666.00	24GE**	732.00	26GE**	667.00	28GE**	636.00
12	12	—	O O O O O O O O O O O O	20NA**	582.00	21NA**	642.00	22NA**	732.00	24NA**	796.00	26NA**	732.00	28NA**	702.00
12	10	2	O O O O O O O O X X	20LC**	600.00	21LC**	660.00	22LC**	750.00	24LC**	816.00	26LC**	750.00	28LC**	720.00
12	8	4	O O O O O O X X X X	20JE**	600.00	21JE**	660.00	22JE**	750.00	24JE**	816.00	26JE**	750.00	28JE**	720.00
12	6	6	O O O O X X X X X X	20GG**	600.00	21GG**	660.00	22GG**	750.00	24GG**	816.00	26GG**	750.00	28GG**	720.00

Insert coil number from Select Contactor Coil Voltage table below.
Other contact configurations available, refer to factory; add **$22.00** to form with all normally open poles. 2-, 3-, 4-, 6-, 8-, 10-, or 12-pole only.

❷ Select Contactor Coil Voltage

No CPT Coil Volts	Cat. No. Digit	w/CPT 120 V Coil	Cat. No. Digit	w/CPT 24 V Coil	Cat. No. Digit
115-120 V, 60 Hz Coil	02			120 V-24 V, 60 Hz	70
230-240 V, 60 Hz Coil	03	208 V-120 V, 60 Hz	92	208 V-24 V, 60 Hz	72
460-480 V, 60 Hz Coil	04	240 V-120 V, 60 Hz	94	240 V-24 V, 60 Hz	74
24 V, 60 Hz Coil	24	277 V-120 V, 60 Hz	96	277 V-24 V, 60 Hz	76
24 Vdc ①	26①	480 V-120 V, 60 Hz	98	480 V-24 V, 60 Hz	78
208 V, 60 Hz Coil	23				
277 V, 60 Hz Coil	36				

❸ Select CPT and/or Control Circuit Fusing

Control Circuit w/o CPT			Control Circuit w/CPT		
Type	Cat. No. Digit	List Price, GO-10MB	Type	Cat. No. Digit	List Price, GO-10MB
No Fuses	1	—	1 Secondary Fuse	3	$202.00
2 Fuses	2	$165.00	2 Primary and 1 Secondary Fuse	4	367.00

❹ Select Push Button or Selector Switch in Cover

Heavy-Duty Pilot Device	Cat. No. Digit	List Price, GO-10MB
Standard (None)	A	—
On-Off① Push Button	B①	$246.00
On-Off Selector Switch	C	165.00
On-Off-Auto Selector Switch	D	165.00
Hand-Off-Auto Selector Switch	E	165.00
On-Off-Auto Keyed Selector Switch (Key Removable in all Positions)	F	333.00
Hand-Off-Auto Keyed Selector Switch (Key Removable in all Positions)	G	333.00
Off-Auto Selector Switch	H	165.00

❺ Select Contactor Pilot Lights in Cover

Heavy-Duty Pilot Device	Cat. No. Digit	List Price, GO-10MB
None	A	—
Red Indicating Light (On)	B	$202.00
Green Indicating Light (On)	C	202.00
PTT Red Indicating (On)	D	220.00
PTT Green Indicating Light (On)	E	220.00
Red (On) and Green (Off)①	F	404.00
Green (On) and Red (Off)①	G	404.00
Red (On) and Green PTT (Off)①	H	440.00
Green (On) and Red PTT (Off)①	L	440.00

① Not available in 12-pole form.

IP7_034840

CR104P Heavy-Duty Indicating Lights

Standard & Push-to-Test

600 Volts Maximum AC/DC
10 Amperes Continuous

Indicating Lights

Type	Voltage	Standard		Push-to-Test	
		Cat. No. CR104P	List Price, GO-10P1	Cat. No. CR104P	List Price, GO-10P1
Transformer 50/60 Hz AC	120 V	LG32*	$64.20	LT32*	$82.20
	240	LG33*	64.20	LT33*	82.20
	480	LG34*	64.20	LT34*	82.20
	600	LG35*	64.20	LT35*	82.20
Full Voltage 50/60 Hz AC	6	LG16*	52.20	LT16*	70.20
	12	LG17*	52.20	LT17*	70.20
	24	LG18*	52.20	LT18*	70.20
	120	LG22*	52.20	LT22*	70.20
Resistor	120	LG42*	52.20	LT42*	70.20
	240	LG43*	52.20	LT43*	70.20
LED Full Voltage AC/DC	6	LG86*	70.20	LT86*	88.20
	12	LG87*	70.20	LT87*	88.20
	24	LG88*	70.20	LT88*	88.20
	120	LG82*	70.20	LT82*	88.20
Transformer 50/60 Hz AC, Flashing Miniature Bayonet Type	120	LG62*	67.20	LT62*	85.20
	240	LG63*	67.20	LT63*	85.20
	480	LG64*	67.20	LT64*	85.20
	600	LG65*	67.20	LT65*	85.20
Full Voltage 50/60 Hz AC, Flashing Miniature Bayonet Type	6	LG56*	70.20	LT56*	88.20
Full Voltage 60 Hz AC, Neon Bayonet Type	120	LG72*	55.20	LT72*	73.20

Standard

Push-to-Test

Remote Test Lights
Dual Input Illuminated Push Buttons

Voltage	Contacts	Catalog No. CR104P	List Price, GO-10P1
120 Vac (90MB Lamp)	With	BL91*1D2	$100.20
	Without	BL00*1D2	82.20

* Insert desired lens color from table.

Dual input illuminated push buttons and indicating lights allow a number of lights to be tested from a single test button without operating the control circuit. A dual input illuminated push button without contacts is a remote test indicating light.

Suitable for use in NEMA Types 1, 3, 3R, 4, 4X, 12, and 13 applications when mounted in enclosures rated for those same applications. For some NEMA Type 4X applications, protective caps will improve corrosion resistance.

*Lens colors available

Color	Insert in Place of *
No Lens	A①②③
Clear	C②
Yellow	E③
Green	G③
Blue	L③
Amber	M
Red	R
White	W

① Subtract **$4.20** from list price with no lens.
② Not suitable for use with LED.
③ Not suitable for use with NEON light.

Lamps ..... **page 9-5**
Technical Data ..... **pages 9-3 to 9-5**
Nameplates ..... **pages 9-33, 9-34**
Drilling Plan and Dimensions ..... **page 9-4**

CR104PXN1BC001

CR104P Heavy-Duty Push Button Nameplates & Legend Inserts

[illegible] Volts Maximum AC/DC
10 Amperes Continuous

Standard Markings (Lithographed) Continued

All nameplates with standard markings are **$1.80 each, GO-10P1. Unless otherwise indicated, all are black and available in Sizes 1-3 only.** To select size, replace asterisk (*) in catalog number with appropriate digit from Sizes table on page 9-33.

Nameplate	Catalog Number CR104P
LOWER RAISE	XN*BP056
OFF ON	XN*BP057
OPEN CLOSE	XN*BP058
RAISE LOWER	XN*BP059
REV FOR	XN*BP060
RUN JOG	XN*BP061
SAFE RUN	XN*BP062
SAFE STOP RUN	XN*BP063
SLOW FAST	XN*BP064
START JOG	XN*BP087
START STOP	XN*BP086
STOP START	XN*BP065
UP DOWN	XN*BP066
OFF COOLANT ON	XN*BP067
[illegible]UTO OFF HAND	XN*BP083
[illegible]R OFF REV	XN*BP068
FOR STOP REV	XN*BP069
HAND OFF AUTO	XN*BP070
JOG OFF RUN	XN*BP071
JOG SAFE RUN	XN*BP072
LOW OFF HIGH	XN*BP073
LOWER OFF RAISE	XN*BP074
MAN OFF AUTO	XN*BP076
OPEN OFF CLOSE	XN*BP077
REV OFF FOR	XN*BP079
SLOW OFF FAST	XN*BP080
SLOW STOP FAST	XN*BP081
POTENTIOMETER MARKINGS	XN*BP082

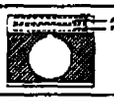
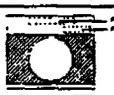
Legend Inserts

Legend insert kits for standard push buttons with clear caps feature three 2-sided inserts per kit. Order CR104PXG101. **List Price, GO-10P1,** is **$1.80** per three-insert kit.

Insert	Side 1	Side 2
1	STOP	STOP
2	START	START
3	↑	↑

Nonstandard Markings (Engraved)

All nameplates with nonstandard engraved markings are **$7.80 each, GO-10P1.** Note limitations on number of characters per field. Specify marking desired, by field, for each nameplate ordered. To select color, replace asterisk (*) in catalog number with **B** for black field and letters and with **R** for red field and letters. For overall dimensions by nameplate size, see Sizes table on preceding page.

Style	Size	Max. characters per field	Cat. No. CR104P
	1	Field 1: 13	XN1*B001
	2	Field 1: 16	XN2*B001
	3	Field 1: 10	XN3*B001
	1	Fields 1-2: 13	XN1*C001
	2	Fields 1-2: 15	XN2*C001
	3	Fields 1-2: 10	XN3*C001
	1	Field 1: 13; Field 2: 7	XN1*D001
	2	Field 1: 15; Field 2: 8	XN2*D001
	3	Field 1: 10; Field 2: 5	XN3*D001
	1	Field 1: 13; Field 2: 7	XN1*E001
	2	Field 1: 15; Field 2: 8	XN2*E001
	3	Field 1: 10; Field 2: 5	XN3*E001
	1	Fields 1-2: 7	XN1*F001
	2	Fields 1-2: 8	XN2*F001
	3	Fields 1-2: 5	XN3*F001
	1	Field 1: 13; Fields 2-3: 7	XN1*G001
	2	Field 1: 15; Fields 2-3: 8	XN2*G001
	3	Field 1: 10; Fields 2-3: 5	XN3*G001
	1	Fields 1-4: 5	XN1*H001
	2	Fields 1-4: 6	XN2*H001
	3	Fields 1-4: 4	XN3*H001
	4	Fields 1-2: 16	XN4*J001
	4	Fields 1-2: 16; Fields 3-4: 8	XN4*K001
	5	Fields 1-4: 18	XN5*L001
	5	Fields 1-4: 18; Fields 5-8: 11	XN5*M001
	1	Field 1: 13	XN1*N001
	2	Field 1: 16	XN2*N001
	3	Field 1: 10	XN3*N001

IP7_034842

CR104PS634B91

CR104P Heavy-Duty, Nonilluminated Selector Switches

[redacted]olts Maximum AC/DC
[redacted]mperes Continuous
Suitable for use in NEMA Type 1, 3, 3R, 4, 4X, 12, and 13 Applications ①

3-Position, Nonilluminated Knob-, Lever-, and Cylinder Lock-Operated Selector Switches

Units are supplied factory-assembled when ordered with contact blocks.

Viewed From Front of Panel		Contact Block	Catalog Numbers and Prices								
Contacts	Operator Position		Standard Knob, Black ② CR104	List Price, GO-10P1	Wing Lever, Chrome ③ CR104	List Price, GO-10P1	Cylinder Lock, Remove Key from:				
Left Right	O = Open X = Closed						Left Only CR104	Center Only CR104	Right Only CR104	All Positions CR104	List Price, GO-10P1
Maintained											
Operator Only	↖ ↑ ↗	None	PSG34B	$22.20	PSM34	$22.20	PSK34A00L	PSK34A00C	PSK34A00R	PSK34A00W	$58.20
NC / NO	NC X O O NO O O X	1NO-1NC 1NO-1NC	PSG34B91 —	40.20 —	PSM34A91 —	40.20 —	PSK34A91L PSK34A91L51 ④	PSK34A91C PSK34A91C51 ④	PSK34A91R PSK34A91R51 ④	PSK34A91W PSK34A91W51 ④	76.20 88.20
NC / NO	L-NC X O O L-NO O O X R-NC X O O R-NO O O X	2NO-2NC	PSG34B92	58.20	PSM34A92	58.20	PSK34A92L	PSK34A92C	PSK34A92R	PSK34A92W	94.20
Operator Only		None	PSG32B	22.20	PSM32	22.20	PSK32A00L	PSK32A00C	PSK32A00R	PSK32A00W	58.20
NC / NO	NC O X O NO X O O	1NO-1NC	PSG32B91	40.20	PSM32A91	40.20	PSK32A91L	PSK32A91C	PSK32A91R	PSK32A91W	76.20
NC / NO	L-NC O X O L-NO X O O R-NC O X O R-NO X O O	2NO-2NC	PSG32B92	58.20	PSM32A92	58.20	PSK32A92L	PSK32A92C	PSK32A92R	PSK32A92W	94.20
Operator Only		None	PSG33B	22.20	PSM33	22.20	PSK33A00L	PSK33A00C	PSK33A00R	PSK33A00W	58.20
NC / NO	NC O X O NO O O X	1NO-1NC	PSG33B91	40.20	PSM33A91	40.20	PSK33A91L	PSK33A91C	PSK33A91R	PSK33A91W	76.20
NC / NO	L-NC O X O L-NO O O X R-NC O X O R-NO O O X	2NO-2NC	PSG33B92	58.20	PSM33A92	58.20	PSK33A92L	PSK33A92C	PSK33A92R	PSK33A92W	94.20
Operator Only		None	PSG35B	22.20	PSM35	22.20	PSK35A00L	PSK35A00C	PSK35A00R	PSK35A00W	58.20
NC / NO	L-NC X O O L-NO O O X R-NC O X O R-NO O O X	2NO-2NC	PSG35B92	58.20	PSM35A92	58.20	PSK35A92L	PSK35A92C	PSK35A92R	PSK35A92W	94.20
Operator Only		None	PSG36B	22.20	PSM36	22.20	PSK36A00L	PSK36A00C	PSK36A00R	PSK36A00W	58.20
NC / NO	L-NC X X O L-NO O O X R-NC O X X R-NO X O O	2NO-2NC	PSG36B92	58.20	PSM36A92	58.20	PSK36A92L	PSK36A92C	PSK36A92R	PSK36A92W	94.20

4-Position, Nonilluminated Knob-, Lever-, and Cylinder Lock-Operated Selector Switches Maintained

Operator Only	↖ ↑ ↑ ↗	None ⑤	PSG47B	22.20	PSM47	22.20	—	—	—	PSK47A00Z	58.20
NC / NO	L-NC X O O O L-NO O O X O R-NC O O O X R-NO O X O O	2NO-2NC ⑤	PSG47B92	58.20	PSM47A92	58.20	—	—	—	PSK47A92Z	94.20

Notes: Catalog Number and price do not include nameplate. All nameplates must be ordered as a separate item from pages 9-33 and 9-34. Two keys included with each cylinder lock.

① When mounted in enclosures rated for those same applications. For some NEMA Type 4X applications, protective caps will improve corrosion resistance.

② To order knob in a color other than black, replace the "B" in listed Catalog Numbers with E (Yellow), G (Green), L (Blue), or R (Red).

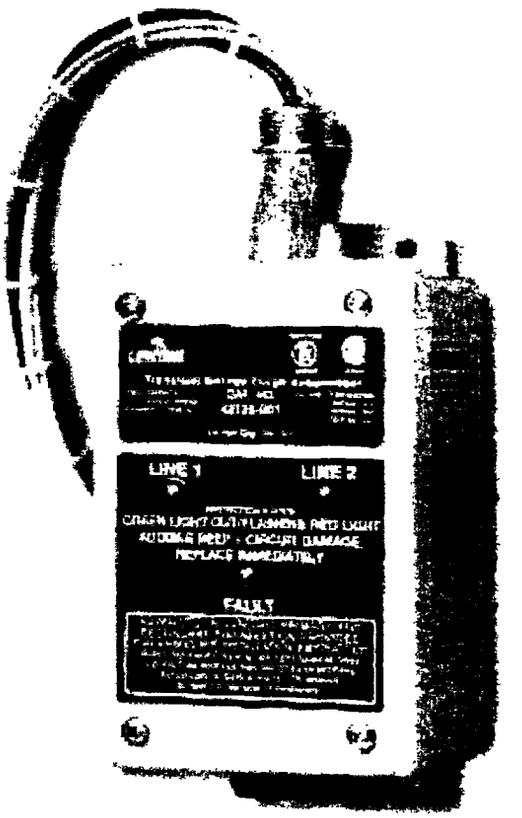
③ To order black wing lever, replace "A" in Catalog Number with "B" before 91 or 92 contact digits. Example: the Catalog Number for a maintained, 1NO-1NC, operator with black wing lever is CR104PSM32B91.

④ CH501 keyed cylinder lock. Other listed cylinder locks are alike and use identical keys. Dissimilar locks are also available; contact nearest GE Industrial Systems—Electrical Distribution and Control Representative.

⑤ Two double-circuit contact blocks, mounted side-by-side, is standard arrangement. No more than two contact blocks, single and/or double, may be used with this operator.

Nameplates and Legend Inserts ..... **pages 9-33, 9-34**
Technical Data ..... **pages 9-3 to 9-5**
Drilling Plan and Dimensions ..... **page 9-4**
Extra Keys for Cylinder Lock Selector Switches ..... **page 9-**

Panel Mounted Multi-Phase Surge Protective Device (SPD)



Cat. No. 42120-001

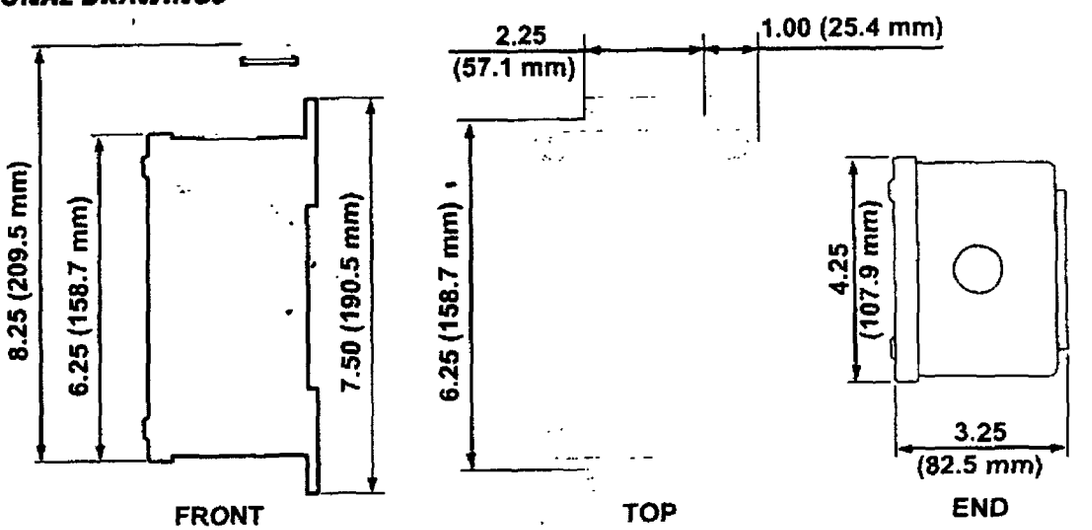
APPLICATION

Cat. No. 42000 is designed for installation in industrial and commercial facilities at service entrance or branch panels. All models protect against high-energy, high-voltage transient surges.

TYPICAL SPECIFICATION

Cat. No. 42000 is designed for use where a multi-phase, transient voltage surge suppressor (TVSS) is specified. Its parallel-operated design features 40mm-diameter, metal-oxide varistors and EMI/RFI filter circuitry equipped with high-voltage-rise capacitors for harmonic tolerance. It incorporates indicator lights and an audible alarm for monitoring power and surge suppression status as well as a dry contact for remote monitoring. Three-phase units are suitable for both WYE and DELTA AC power systems. Only the Cat. No. 42120-001 is a single-phase surge suppressor. The 42000 has been tested to ANSI/IEEE C62.41 standards for Category A, B and C environments and is UL 1449 (2nd Edition) Listed. It is also backed by Leviton's Limited Ten-Year Warranty.

DIMENSIONAL DRAWINGS



Cat. No. 42000 Series

ISO 9000 REGISTERED

Leviton Mfg. Co., Inc. – Power Quality Division, 860 Harold Place, Chula Vista, CA 91914
• Tech line: 1-800-648-3332 • Fax: 619-205-8739

LEVITON. POWER QUALITY DIVISION
Building a Connected World

Panel Mounted Multi-Phase Surge Protective Device (SPD)

42000 Series

PERFORMANCE SPECIFICATIONS

Cat. No.	Rating Operating Frequency @ 50, 60Hz	MCOV* (L-N)	MCOV* (L-L)	Max. Single-Pulse Transient Energy per phase (10x1000µs) Joules	Max. Single-Pulse Surge Current NM/CM per phase (8x20µs)
42120-001	120/240V AC single-phase	150	270	720	80kA
42120-DY3	120/208V AC 3-phase WYE, 220V AC 3-phase DELTA	150	270	1440	80kA
42277-DY3	277/480V AC 3-phase WYE, 220/380V AC 3-phase WYE, 240V AC 3-phase DELTA, 480V AC 3-phase DELTA	320	540	2560	80kA
42347-DY3	347/600V AC 3-phase WYE	420	660	3640	80kA
42412-DS3	120/240V AC Hi-Leg, Split-Phase DELTA	150	250	1210	80kA

*Maximum Continuous Operating Voltage

CLAMPING PERFORMANCE

Specification	42120-001 L-N/L-L/N-G	42120-DY3 L-N/L-L/N-G	42277-DY3 L-N/L-L/N-G	42347-DY3 L-N/L-L/N-G	42412-DS3 L-L/HiL-G/L-N(CT)/HiL-N
Cat. B3 combination wave (6kV/3kA) peak clamping voltage	532/832/514	532/832/514	996/1570/920	1100/2200/1100	925/1250/520/725
UL 1449 Suppressed Voltage Ratings (SVR)†	500/700/500	500/700/500	900/1500/800	1200/2000/1000	800/1000/400/700

†Suppressed Voltage Ratings (SVR) assigned at 6-inch lead length with 6kV/500A impulse in accordance with UL 1449 (2nd Edition)

EMI/RFI NOISE REJECTION

All Cat. No. 42000 SPD's	Normal Mode	Common Mode
Evaluation Bandwidth	10kHz – 10MHz	10kHz – 10MHz
Noise Rejection @ 50 Ohms	30 – 40dB	30 – 40dB

PHYSICAL SPECIFICATIONS

Housing	NEMA Type 3R steel enclosure
Physical Dimensions (approx.)	6.25" (158.8mm) x 4.25" (108.0mm) x 3.25" (82.6mm)
Mounting	Flush mount into 3/4" panel knockout or use flanges to surface mount
Operating Temperature Range	-10° to 60°C
Storage Temperature Range	-20° to 85°C
Relative Humidity	5% to 95% non-condensing
Altitude	Up to 3600m (11,800 ft.)

AGENCY APPROVALS: • Listed UL 1449 Standard (2nd Edition) • CSA Certified

PRODUCT MAINTENANCE

Real-time diagnostics monitor power and surge suppression status of each phase. If protection is lost, the green LED will no longer illuminate, red "fault" LED will illuminate, and the alarm will sound—the unit should be replaced. If unit is located where LED warning is not easily observable, remote diagnostics may be used. Unit is equipped with remote-monitoring dry contacts rated 5 Amps, 120/240V AC via three, color-coded 18AWG leads rated 600V AC.

FEATURES

- Normal and common mode protection (line to neutral, line to line, and line to ground) for WYE and DELTA configured, 3-phase AC systems (Cat. No. 42120-001 rated for 120/240V AC single-phase systems)
- Real-time diagnostics monitor power and suppression status for each phase and provide both LED indicators and an audible alarm.
- Clamping envelope tracks contour of the AC sine wave
- Equipped with dry contacts for remote diagnostics

LEVITON
POWER QUALITY DIVISION
Building a Connected World

Leviton Mfg. Co., Inc. – Power Quality Division, 860 Harold Place, Chula Vista, CA 91914
• Tech line: 1-800-648-3332 • Fax: 619-205-8739

ISO 9000 REGISTERED

G-5378GH1-3M rs

IP7_034845

The only UL recognized photocell for Class I, Division 2 areas eliminates the need for an *explosionproof box.*

Crouse-Hinds V2PC factory-sealed, field installed photocell offers reliable, dusk-to-dawn lighting control in Class I, Division 2 locations. The V2PC is ideal for walkways, *security lighting, and any other outdoor* lighting application that utilizes Champ* H.I.D. lighting fixtures.

Applications:

The V2PC is designed:
- to provide control for automatic dusk-to-dawn lighting
- for use with LMV, DMV, VMV, VMV High Wattage, N2MV and FMV Series Champ* lighting fixtures.
- for use on 35-400 watt H.I.D., incandescent, or fluorescent lighting fixtures.
- to save energy by operating fixtures only when necessary.
- for safety by turning on outdoor fixtures in critical passageways at night.
- for walkways, parking areas, outdoor process areas, security lighting, or any outdoor lighting application in Class I, Division 2 locations and corrosive environments
- for remote mounting in FS boxes (D2S Series).
- for mounting in EIH enclosures for Class I, Division 1 applications (EV2IH Series).

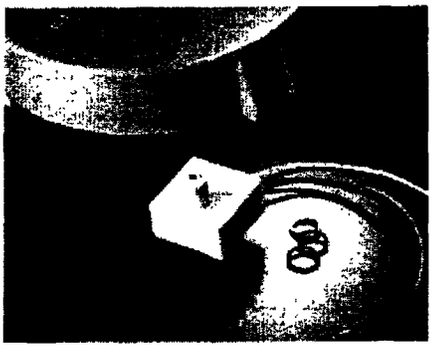
Features:

- Field-installable.
- Solid-state design for performance and dependability
- Factory sealed components Explosionproof enclosure not required for Class I Division 2 locations.
- Fixtures turn on at 3 footcandles, off at 8 footcandles insuring that the fixtures are operating only when needed.
- Built-in 10 second time delay to eliminate nuisance tripping.
- Eight-year operating life
- Furnished with 6" stranded 600 volt color coded wire leads
- Constructed from corrosion-resistant thermoplastic polyester.
- Available on a DS cover for use with any FS/FD box (D2S Series)
- Available in an EIH enclosure for use in Class I, Division 1, Groups B†, C, and D locations (EV2IH Series).

Electrical Rating Ranges:

- 120, 208, 220, 240, 277 VAC
- 50/60 Hz
- 35-400 watt H.I.D., incandescent, or fluorescent
- V2PC20 – 3.3A max. current rating
- V2PC22 – 1.8A max. current rating
- V2PC27 – 1.4A max. current rating

† For Group B applications, seal within 1½" of enclosure in accordance with Section 501.5 of the National Electric Code.



Certifications and Compliances:

V2PC and D2S
- NEC/CEC: Class I, Division 2, Groups A, B, C, D
- UL Standard: 844 – Hazardous (Classified) Locations
- CSA: C22.2 No. 55

EV2IH
- NEC/CEC:
  Class I Division 1 and 2, Groups B, C, D
  Class II, Division 1, Groups E, F, G
  Class II Division 2, Groups F, G
  Class III
- NEMA: 3, 4, 7BCD, 9EFG
- UL Standard: 844 – Hazardous (Classified) Locations
- CSA: C22.2 No. 30, 55

Options:

To order fixture with **photocell factory installed**, add photocell Cat. No. to fixture Cat. No. as follows

V2PC20
V2PC22
V2PC27

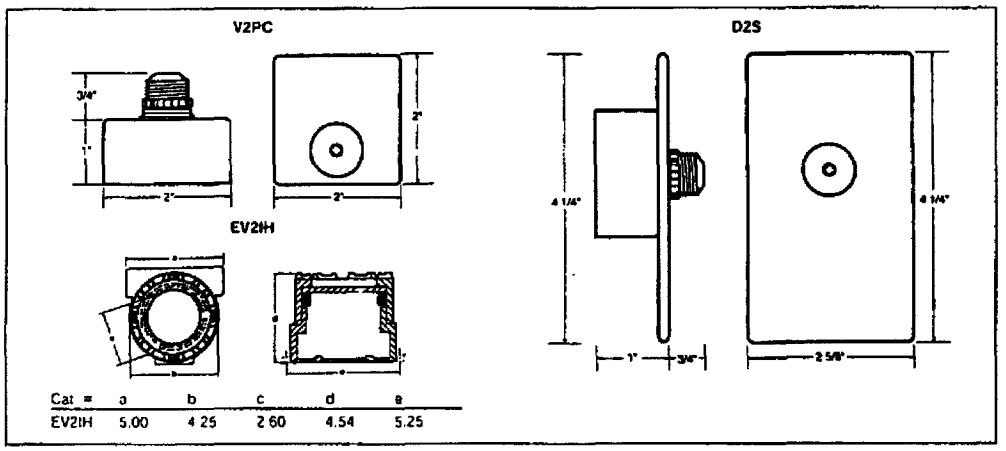
Example: VMVSJ070GP/120-V2PC20 is a 120V 60Hz light fixture with a factory installed photocell

3L-38 V2PC Photocell

Cl. I, Div. 2, Groups A,B,C,D

Dimensions
Ordering Information

Dimensions:



Cat #	a	b	c	d	e
EV2IH	5.00	4.25	2.60	4.54	5.25

Ordering Information

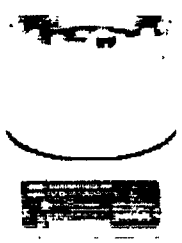
Photocell for field installation*

Catalog #	Voltage Range
V2PC20	120V, 50/60 Hz
V2PC22	208-240V, 50/60 Hz
V2PC27	277V, 50/60 Hz

* Must be factory installed in Cutlass — see 3L-37

Photocell in DS cover for use with FS/FD box

Catalog #	Voltage Range
D2S20	120V, 50/60 Hz
D2S22	220/240V, 50/60 Hz
D2S27	277V, 50/60 Hz



Photocell in EIH enclosure for use in Class I, Division 1, Groups B, C, and D; Class II, Division 1, Groups E, F, and G; and Class III locations

Catalog #	Voltage Range
EV2IH20	120V, 50/60 Hz
EV2IH22	220/240V, 50/60 Hz
EV2IH27	277V, 50/60 Hz

PURCHASE ORDER

04 MAR 2003

VENDOR MUST SHOW P.O. NUMBER ON ALL INVOICES, BILL OF LADING. CORRESPONDENCE, AND ON PACKING LISTS IN EACH CONTAINER, TO INSURE PROMPT PAYMENT. CHARGES FOR TRANSPORTATION MUST BE SUPPORTED BY COPY OF FREIGHT BILL.

PURCHASE ORDER NO.	VENDOR CODE	REQUISITION NO
03-45590	7914	185837

INTERMOUNTAIN POWER SERVICE CORP.
Delta, Utah 84624-9546 (435) 864-4414 - Purchasing FAX (435) 864-6678

VENDOR: GSL ELECTRIC
8540 SOUTH SANDY PARKWAY
SANDY, UT 84070

801-565-0088

* * * S H I P T O * * *
INTERMOUNTAIN POWER SERVICE CORPORATION
850 W. BRUSH WELLMAN RD.
DELTA , UT 84624-9546

CONFIRMING DO NOT DUPLICATE	NON CONFIRMING	SHIP VIA	TERMS	FOB POINT	PAGE OF	
X		VENDOR	AS INVOICED	S/P P.P. & ADD	1 OF 1	NONE

INTERMOUNTAIN POWER SERVICE CORPORATION'S STANDARD TERMS AND CONDITIONS ARE INCLUDED AS PART OF THIS AGREEMENT

QUANTITY ORDERED	UNIT	IPSC PART NO.	DESCRIPTION	ACCOUNT NUMBER	UNIT PRICE	EXTENSION
1	EA		LINE 1 ELECTRICAL CONSTRUCTION SERVICES FOR HELPER COOLING TOWER, TRANSFORMER COOLERS, ISOPHASE BUS DUCT, & OTHER ELECTRICAL PROJECTS **PER SPECIFICATIONS 45590 & CONTRACT 03-45590** CONFIRMING TO RALPH ALLEN - DO NOT DUPLICATE JRL/CLE **NOTE: PURCHASE ORDER FOR TRACKING PURPOSE ONLY**	00-1HRX-401	800,000.00	800,000.00
			DATE REQUIRED 02/28/05		TOTAL COST	800,000.00

1. Invoices and correspondence may be mailed to Intermountain Power Service Corporation, 850 West Brush Wellman Rd., Delta, Utah, 84624-9546.
2. Acknowledgement is required if shipment will not be made within **Five** days.
3. **Mark packages or items with IPSC part number and/or P.O. Line number. Show number on invoice and packing slip.**
4. Vendor must furnish applicable material safety data sheets.
5. Add to invoice all applicable federal taxes.

UTAH VENDORS ARE TO ADD TO THE INVOICE ALL APPLICABLE STATE, AND COUNTY TAXES.

OUT OF STATE VENDORS, LICENSED TO COLLECT UTAH TAXES. ARE TO ADD TAX OF 6%.

UTAH TAXES WILL BE ACCRUED BY IPSC FOR OUT OF STATE VENDORS NOT LICENSED TO COLLECT UTAH STATE TAX

JOHN LARSEN 435-864-4414
BUYER

REVIEWED BY GEORGE CROSS

IP7_034848

PURCHASE ORDER

VENDOR MUST SHOW P.O. NUMBER ON ALL INVOICES, BILL OF LADING. CORRESPONDENCE, AND ON PACKING LISTS IN EACH CONTAINER, TO INSURE PROMPT PAYMENT. CHARGES FOR TRANSPORTATION MUST BE SUPPORTED BY COPY OF FREIGHT BILL.

PURCHASE ORDER NO.	VENDOR CODE	REQUISITION NO
03-45590	7914	185837

04 MAR 2003
REVISED 18 FEB 2004

INTERMOUNTAIN POWER SERVICE CORP.
Delta, Utah 84624-9546 (435) 864-4414 - Purchasing FAX (435) 864-6678

VENDOR: GSL ELECTRIC
8540 SOUTH SANDY PARKWAY
SANDY, UT 84070

801-565-0088 OR 801-977-9988

* * * S H I P T O * * *
INTERMOUNTAIN POWER SERVICE CORPORATION
850 W. BRUSH WELLMAN RD.
DELTA , UT 84624-9546

CONFIRMING DO NOT DUPLICATE	NON CONFIRMING	SHIP VIA	TERMS	FOB POINT	PAGE OF	
X		VENDOR	AS INVOICED	S/P P.P. & ADD	1 OF 2	NONE

INTERMOUNTAIN POWER SERVICE CORPORATION'S STANDARD TERMS AND CONDITIONS ARE INCLUDED AS PART OF THIS AGREEMENT

QUANTITY ORDERED	U M	IPSC PART NO.	DESCRIPTION	ACCOUNT NUMBER	UNIT PRICE	EXTENSION
			THIS IS A PURCHASE ORDER ADJUSTMENT			
			LINE 1		** PRICE	CHANGED
0	EA		ELECTRICAL CONSTRUCTION SERVICES FOR HELPER COOLING TOWER, TRANSFORMER COOLERS, ISOPHASE BUS DUCT, & OTHER ELECTRICAL PROJECTS **PER SPECIFICATIONS 45590 & CONTRACT 03-45590**	1HRX-502	2,125,000.00	0.00
			**PER REQUISITION 196987, INCREASE CONTRACT AN ADDITIONAL $475,000 FOR 2003-2004 BUDGET YEAR PROJECTS THAT WILL INCLUDE:			
			IGS03-11: STACK POWER $ 34,000			
			IGS01-14: GENERATOR VIBRATION UPGRADE $ 40,000			
			IGS02-09: PA FLOW INSTRUMENTATION $130,000			
			IGS02-07: ID FAN DRIVE REPLACEMENT $ 75,000			
			IGS02-14: OVERFIRE AIR ELECTRICAL $ 75,000			
			IGS02-12/16: FORCED OXIDATION $100,000			
			MISCELLANEOUS OTHER WORK $ 21,000			

1. Invoices and correspondence may be mailed to Intermountain Power Service Corporation, 850 West Brush Wellman Rd., Delta, Utah, 84624-9546.
2. Acknowledgement is required if shipment will not be made within FIVE days.
3. **Mark packages or items with IPSC part number and/or P.0. Line number. Show number on invoice and packing slip.**
4. Vendor must furnish applicable material safety data sheets.
5. Add to invoice all applicable federal taxes.

UTAH VENDORS ARE TO ADD TO THE INVOICE ALL APPLICABLE STATE, AND COUNTY TAXES.

OUT OF STATE VENDORS, LICENSED TO COLLECT UTAH TAXES. ARE TO ADD TAX OF 6%.

UTAH TAXES WILL BE ACCRUED BY IPSC FOR OUT OF STATE VENDORS NOT LICENSED TO COLLECT UTAH STATE TAX

BUYER

IP7_034849

PURCHASE ORDER

INTERMOUNTAIN POWER SERVICE CORP.
Delta, Utah 84624-9546 (435) 864-4414 - Purchasing FAX (435) 864-6678

04 MAR 2003
REVISED 18 FEB 2004

VENDOR MUST SHOW P.O. NUMBER ON ALL INVOICES, BILL OF LADING, CORRESPONDENCE, AND ON PACKING LISTS IN EACH CONTAINER, TO INSURE PROMPT PAYMENT. CHARGES FOR TRANSPORTATION MUST BE SUPPORTED BY COPY OF FREIGHT BILL.

PURCHASE ORDER NO.	VENDOR CODE	REQUISITION NO
03-45590	7914	185837

VENDOR: GSL ELECTRIC

* * * S H I P T O * * *
INTERMOUNTAIN POWER SERVICE CORPORATION
850 W. BRUSH WELLMAN RD.
DELTA , UT 84624-9546

801-565-0088 OR 801-977-9988

CONFIRMING DO NOT DUPLICATE	NON CONFIRMING	SHIP VIA	TERMS	FOB POINT	PAGE OF	
X		VENDOR	AS INVOICED	S/P P.P. & ADD	2 OF 2	NONE

INTERMOUNTAIN POWER SERVICE CORPORATION'S STANDARD TERMS AND CONDITIONS ARE INCLUDED AS PART OF THIS AGREEMENT

QUANTITY ORDERED	U M	IPSC PART NO.	DESCRIPTION	ACCOUNT NUMBER	UNIT PRICE	EXTENSION
			THIS IS A PURCHASE ORDER ADJUSTMENT **PER REQUISITION 200003, INCREASE CONTRACT AMOUNT BY $850,000. APPROVED BY GEORGE CROSS & LADWP** JRL/CLE 2/18/04			

1. Invoices and correspondence may be mailed to Intermountain Power Service Corporation, 850 West Brush Wellman Rd., Delta, Utah, 84624-9546.
2. Acknowledgement is required if shipment will not be made within FIVE days.
3. **Mark packages or items with IPSC part number and/or P.O. Line number. Show number on invoice and packing slip.**
4. Vendor must furnish applicable material safety data sheets.
5. Add to invoice all applicable federal taxes.

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UTAH TAXES WILL BE ACCRUED BY IPSC FOR OUT OF STATE VENDORS NOT LICENSED TO COLLECT UTAH STATE TAX

JOHN LARSEN 435-864-4414
BUYER

REVIEWED BY GEORGE CROSS

IP7_034850

PURCHASE ORDER

INTERMOUNTAIN POWER SERVICE CORP.
Delta, Utah 84624-9546 (435) 864-4414 - Purchasing FAX (435) 864-6678

04 MAR 2003
REVISED 19 NOV 2003

VENDOR MUST SHOW P.O NUMBER ON ALL INVOICES, BILL OF LADING. CORRESPONDENCE, AND ON PACKING LISTS IN EACH CONTAINER, TO INSURE PROMPT PAYMENT. CHARGES FOR TRANSPORTATION MUST BE SUPPORTED BY COPY OF FREIGHT BILL.

PURCHASE ORDER NO.	VENDOR CODE	REQUISITION NO
03-45590	7914	185837

VENDOR: GSL ELECTRIC
8540 SOUTH SANDY PARKWAY
SANDY, UT 84070

801-565-0088 OR 801-977-9988

* * * S H I P T O * * *
INTERMOUNTAIN POWER SERVICE CORPORATION
850 W. BRUSH WELLMAN RD.
DELTA , UT 84624-9546

CONFIRMING DO NOT DUPLICATE	NON CONFIRMING	SHIP VIA	TERMS	FOB POINT	PAGE OF	
X		VENDOR	AS INVOICED	S/P P.P. & ADD	1 OF 1	NONE

INTERMOUNTAIN POWER SERVICE CORPORATION'S STANDARD TERMS AND CONDITIONS ARE INCLUDED AS PART OF THIS AGREEMENT

QUANTITY ORDERED	U M	IPSC PART NO.	DESCRIPTION	ACCOUNT NUMBER	UNIT PRICE	EXTENSION
			THIS IS A PURCHASE ORDER ADJUSTMENT			
			LINE 1		** PRICE	CHANGED
0	EA		ELECTRICAL CONSTRUCTION SERVICES FOR HELPER COOLING TOWER, TRANSFORMER COOLERS, ISOPHASE BUS DUCT, & OTHER ELECTRICAL PROJECTS **PER SPECIFICATIONS 45590 & CONTRACT 03-45590**	1HRX-502	1,275,000.00	0.00
			**PER REQUISITION 196987, INCREASE CONTRACT AN ADDITIONAL $475,000 FOR 2003-2004 BUDGET YEAR PROJECTS THAT WILL INCLUDE:			
			IGS03-11: STACK POWER $ 34,000			
			IGS01-14: GENERATOR VIBRATION UPGRADE $ 40,000			
			IGS02-09: PA FLOW INSTRUMENTATION $130,000			
			IGS02-07: ID FAN DRIVE REPLACEMENT $ 75,000			
			IGS02-14: OVERFIRE AIR ELECTRICAL $ 75,000			
			IGS02-12/16: FORCED OXIDATION $100,000			
			MISCELLANEOUS OTHER WORK $ 21,000			

1. Invoices and correspondence may be mailed to Intermountain Power Service Corporation, 850 West Brush Wellman Rd., Delta, Utah, 84624-9546.
2. Acknowledgement is required if shipment will not be made within FIVE days.
3. **Mark packages or items with IPSC part number and/or P.O. Line number. Show number on invoice and packing slip.**
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5. Add to invoice all applicable federal taxes.

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OUT OF STATE VENDORS, LICENSED TO COLLECT UTAH TAXES. ARE TO ADD TAX OF 6%.

UTAH TAXES WILL BE ACCRUED BY IPSC FOR OUT OF STATE VENDORS NOT LICENSED TO COLLECT UTAH STATE TAX

JOHN LARSEN 435-864-4414
BUYER

REVIEWED BY GEORGE CROSS

IP7_034851

INTERMOUNTAIN POWER SERVICE CORPORATION

☐ REQUISITION FOR CAPITAL EQUIPMENT

☒ PURCHASE AUTHORIZATION FOR EXPENSE ITEMS

Purpose of Materials, Supplies or Services:

INCREASE GSL CONTRACT 03-045590 TO COVER WORK TO BE DONE DURING UNIT 2 OUTAGE.

Date: 02/13/04
Req./PA No: 200003
P.O. No: 03/45590
Vendor: 7914 - GSL ELECTRIC
Terms: AS INVOICED
FOB: S/P P.P. & ADD
Ship Via: VENDOR
Conf. To:

Buyer: John Larson

Suggested Vendor: GSL ELECTRIC
8540 SOUTH SANDY PARKWAY
SANDY, UT 84070

Account No. VARIOUS
Work Order No. VARIOUS
Project No. VARIOU

Qty	Unit	Description Noun Adjective Catalog # Seller or Manufacturer	Unit Cost	Extension
1	SV	INCREASE DOLLAR AMOUNT IN GSL CONTRACT 03-45590	$850,000.00	$850,000.00
		TO DO WORK FOR SPRING 2004 OUTAGE AND REMAINDER		
		OF 2004. THESE PROJECTS INCLUDE:		
		IGS02-12/16 - FORCED OXIDATION		
		IGS02-09 - PA FLOW INSTRUMENTATION		
		IGS02-7 - ID FAN INSTALLATION		
		IGS02-14 - OVERFIRE AIR ELECTRICAL		
		IGS01-14 - TURBINE VIBRATION SYSTEM		
		MISCELLANEOUS OTHER WORK		
		TOTAL ESTIMATED COST		$850,000.00

$1,275,000.00
+ 850,000.00
2,125,000.00
Total

P.O.A. to add to Contract 03-45590
Dates remain unchanged.

Remarks:

Delivery requested by (Date) 02/17/04 Originator MICHAEL NUTTALL

Dept. Mgr/Supt. 2-17-04 Date
Station Manager 2/17/04 Date
Operating Agent 2-18-04 Date

Proprietary - to add to current contract amount. 2/18/04
OK 2-18-04